



# The MENA Region Initiative as a Model of NEXUS Approach and Renewable Energy Technologies Project (MINARET)



**FUTURE  
PIONEERS**  
Empowering Communities



جديدة الشوف  
إعداد بلديات الشوف السويجاني

## Situational Analysis & Assessments

Jdaideh-Lebanon  
31/10 – 1/11/2017

# ACKNOWLEDGEMENT **شكر** **وتقدير**

MINARET Team would like to show their great gratitude and to express their clear recognition of the support provided by Al-Jdaideh Municipality, distinguished stakeholders and Lana Association (the focal point) and the excellent cooperation in implementing the First Year Activities in Lebanon.

## Special Thanks to:

Mr. Hisham Fatayri, the Mayor of Jdaideh

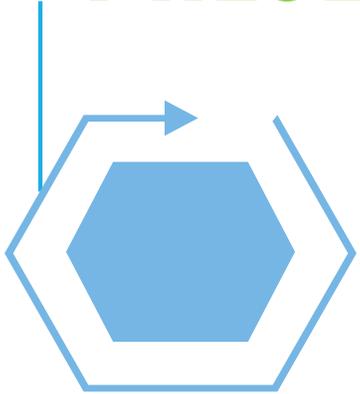
Ms. Donia Fatayri

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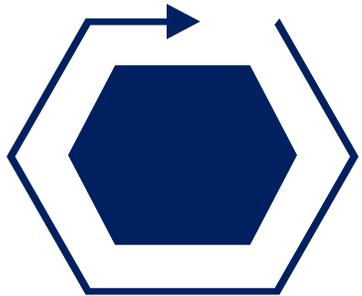
Mr. Nizar Hani

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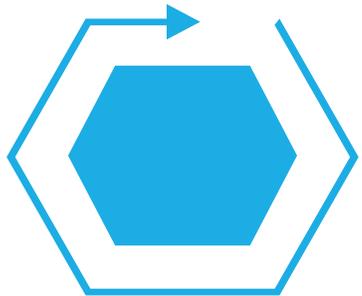
# PRESENTATION OUTLINE



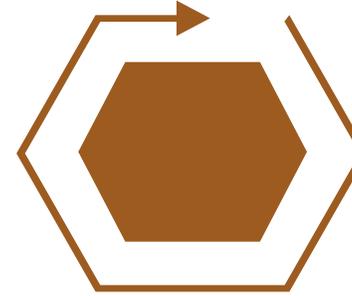
Introduction



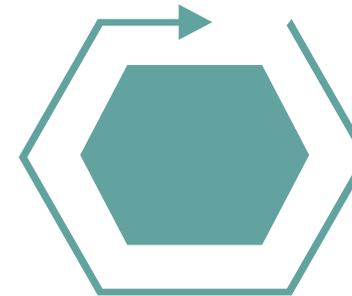
Stakeholders  
Identification &  
Policy Assessment



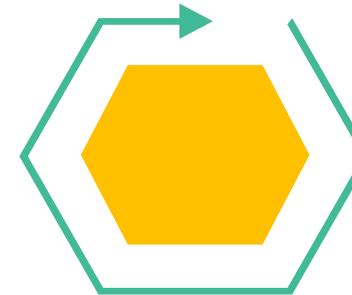
Water Assessment



Socioeconomic  
Assessment

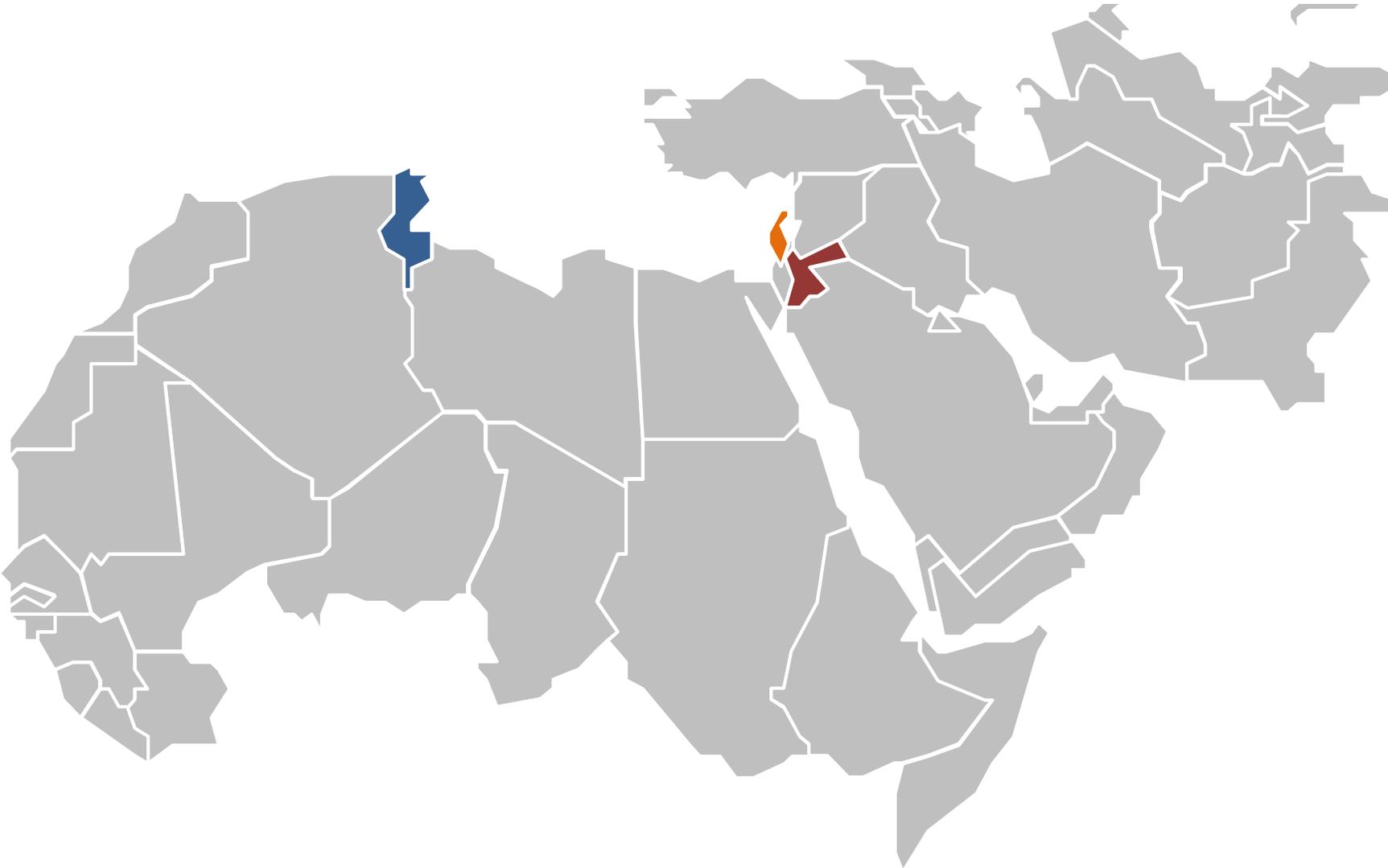


Gender Assessment



Energy Assessment

# INTRODUCTION



**Tunisia** 

**Lebanon** 

**Jordan** 

# حفل انطلاق المشروع – عمان الاردن



# حفل انطلاق المشروع - الجديد - لبنان

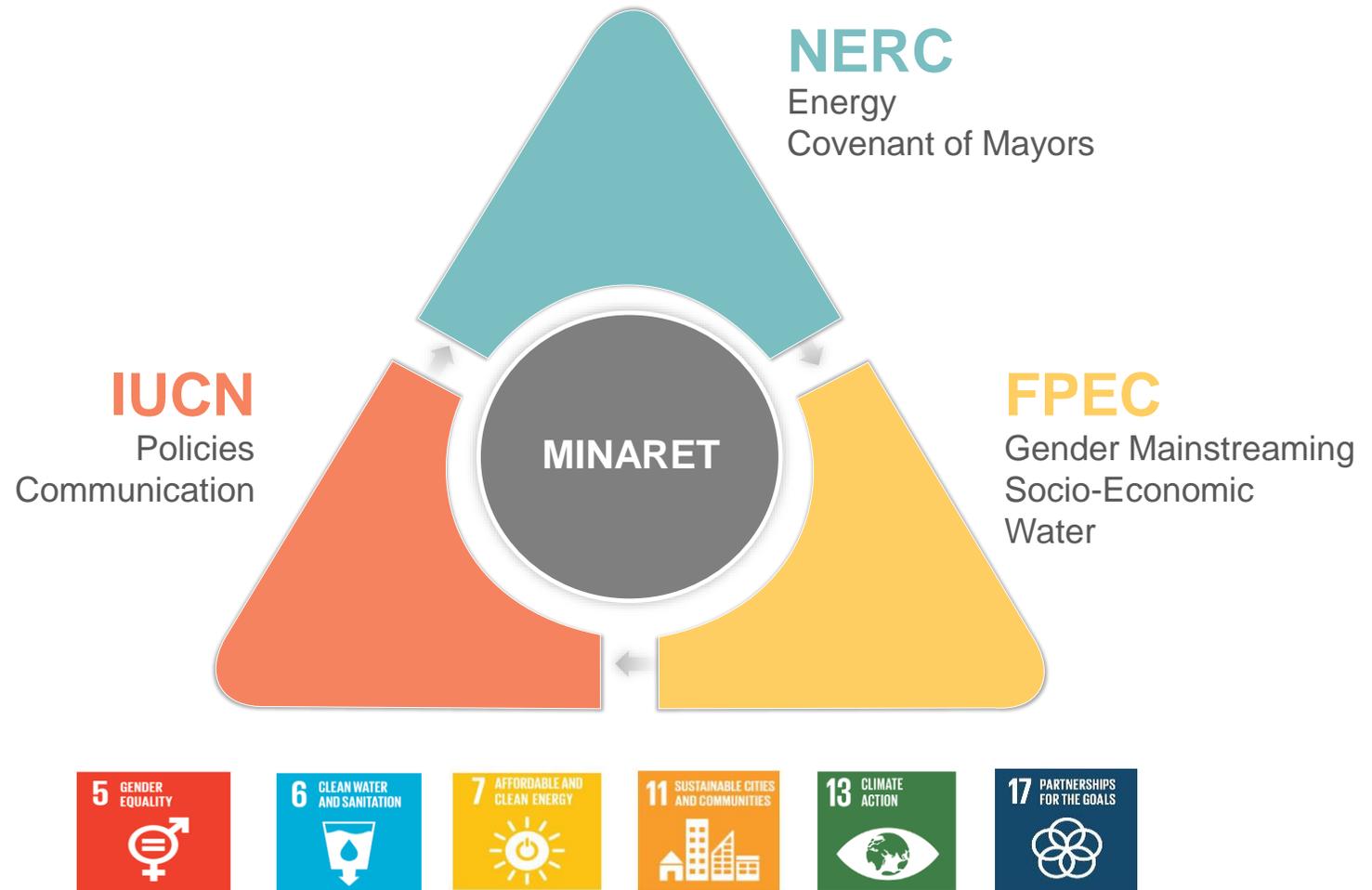


# حفل انطلاق المشروع - المنستير - تونس

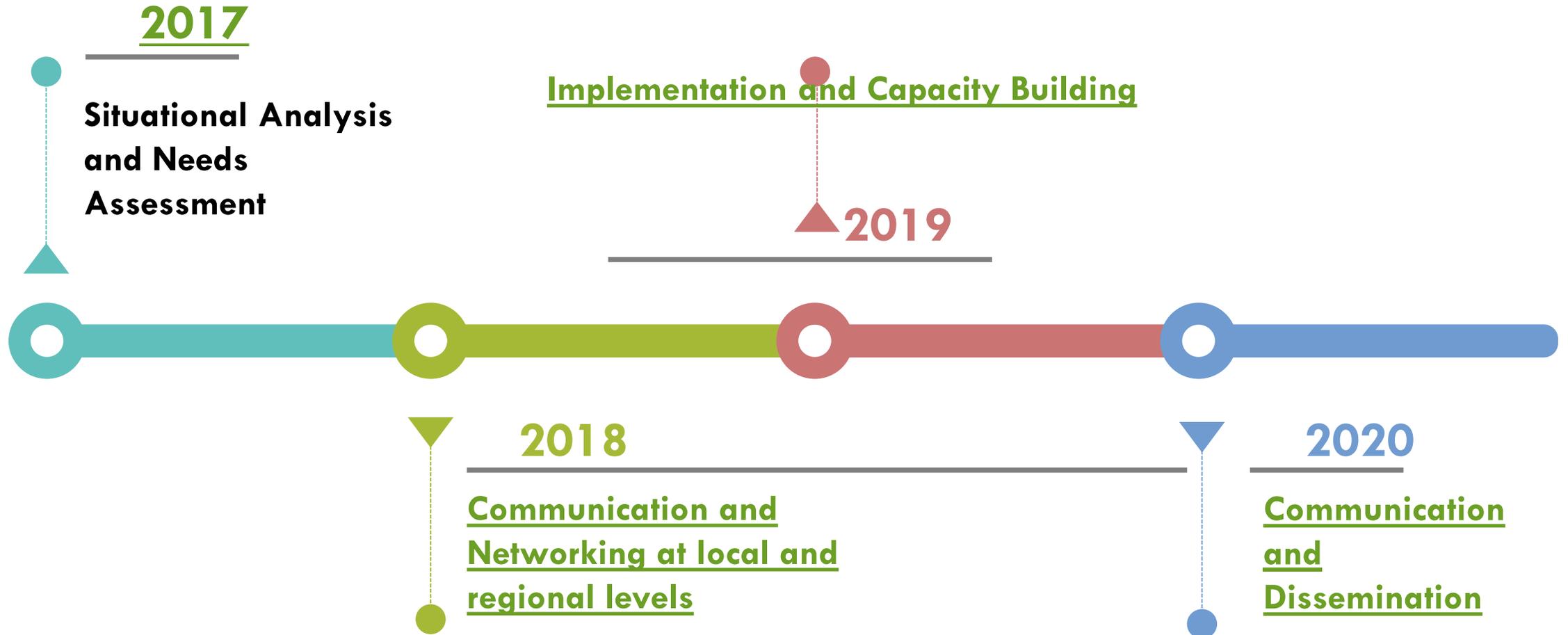


# Introduction

- Review of Year 1 Activities
- Highlights of Year 1 Accomplishments and alignments with SDGs
- Project Timeframe



# MINARET PROJECT TIMELINE OVERVIEW



# Stakeholder Analysis at JDEIDET EL CHOUF Level

- **A project stakeholder** is defined as ‘an individual, group, or organization, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of the project
- **MINARET stakeholders at Jdeidet el Chouf level** are individuals/entities that have an interest, who are involved or whose work or interest affects or is affected by the sectors of water, food, and energy

(Project Management Institute, 2013 and ISO 21500).



## Stakeholder Analysis Objective

- The **overall objective** of the detailed stakeholders' analysis is to draw up each actor or group of actors' profile in relation to specific criteria which allows targeting Jdeideh stakeholders potentially to involve in following project design, amendments, developments, activities and monitoring.
- Clearly identify Jdeideh area actors who affect and are affected by the project, with a special focus on those involved in different NEXUS sectors and renewable energy technologies



# Approach and Methodology

- The assignment was conducted in a **participatory** and **open** way. The main intervention approaches were i) **Rapid Appraisal** and ii) **leave no one behind** as a key approach to involve and stimulate actors and vulnerable groups representation and implication.
- The stakeholder analysis was performed using the following methodology:
  - **Stakeholder Identification**
  - **Stakeholder Workshops**
  - **Stakeholder Analysis**



# Stakeholders profile

Stakeholder List	Group	Level of Stakeholder
Municipality of Jdeidet El Chouf	Municipality	Local
Municipality of Semqanieh	Municipality	Local
Population of Jdeidet El Chouf and Semqanieh	General Population	Local
Syrian Refugees in Jdeidet El Chouf and Semqanieh	General Population	
Jdeidet El Chouf- Baqaata Women Organization	NGO	Local
Progressive Women's Union – Jdeidet El Chouf	NGO	Local
Popular committees – Jdeidet El Chouf/Baqaata	Informal	Local
Echotech Solutions Middle East	Private Sector	Regional
Green Alternative Power Sources (GAPS)	Private Sector	Local

# Stakeholders profile

Green Orient	NGO	Local
Green Plan	Ministry of Agriculture	National
LANA Youth Organization	NGO	Local
Ministry of Agriculture (MoA)	Ministry	National
Lebanese Agriculture Research Institute (LARI)	Ministry of Agriculture	National
Ministry of Energy and Water (MoEW)	Ministry	National
Ministry of Economy and Trade (MoET)	Ministry	National
Ministry of Finance (MoF)	Ministry	National
Investment Development Authority of Lebanon (IDAL)	Council of Ministers	National
Establishment of The Water of Beirut and Mount Lebanon (EWBM)	Ministry of Energy and Water	National

# Stakeholders

## profile

Lebanese Center for Energy Conservation (LCEC )	Ministry of Energy and Water	National
Schools and Universities	Ministry of Education and Higher Education	Local
Farmers	General Population	Local
Water Cisterns Owners	General Population	Local
Generator Owners	General Population	Local
Association of Traders	NGO	Local
Electricite Du Liban (EDL)	Ministry of Energy and Water	National
The Economic and Social Fund for Development	Council for Development and Reconstruction (CDR)/EU	National
Progressive Social Party	Political Party	National
Religious Notables	General Population	Local
Intellocomp	Private Sector	Local
UNDP	UN	Regional/International
Food and Agriculture Organization FAO	UN	International
Future Pioneers for Empowering Communities	NGO	Regional
International Union for Conservation of Nature (IUCN)	Membership Union	Regional/International
ACS	NGO	National

# Stakeholder Workshops

- Two stakeholder workshops were conducted at the municipality of Jdeidet El Chouf.
  - **The first workshop took place on May 19, 2017**
  - **The second workshop on June 6, 2017.**

The workshops were planned based on RAAKS tools, SDCA approach, and the EMPOWERS guidelines.



# The purpose of stakeholder workshops

- Introduce the stakeholders to each other
- Inform the stakeholders on the project taking place in Jdeidet El Chouf and Semqanieh
- Create platform for stakeholders, where they can explicit their opinions, perceptions, assumptions and judgments
- Improve flows of information between the stakeholders, and create appropriate conditions for innovation
- Train the participants on problem identification and analysis methods, and the development of visions and strategies
- Support the local stakeholders in making technical and political decisions,
- Form shared objectives, beliefs and information among the stakeholders, and
- Identify the stakeholders who could work effectively together, and raise awareness on the factors, constraints and opportunities that affect their performance, which promotes networking among them

## Level of Interest, Influence and Knowledge on the Issues of Energy, Water and Food, and Access to High Quality Information

Organization	Municipality of Jdeidet El Chouf	Jdeidet El Chouf- Baqaata Women Organization	Municipality of Semqanieh	Al-Shouf Cedar Society /SBR	Green Orient	Ministry of Agriculture	LANA Youth Organization	Popular Committees	Ecotech Solutions Middle East	GAPS	Electricite Du Liban	Progressive Women's Union
Level of interest in energy	H	H	H	M	H	H	H	H	H	H	H	H
Level of interest in water management	H	M	H	H	H	H	H	H	M	M	M	H
Level of interest in food security	H	M	M	H	M	H	H	H	M	M	L	H
Level of knowledge about Energy	M	L	M	M	M	M	H	M	H	H	H	L
Level of knowledge about Water	M	L	M	H	L	M	H	M	L	M	L	L
Level of knowledge about Food Security	M	L	M	H	L	M	M	M	L	M	L	M
Level of knowledge about climate change issues and impact mitigation	L	L	L	H	H	L	M	M	M	H	M	L
Access to high quality information about Energy related issues	L	M	H	M	H	H	H	M	H	H	H	H
Access to high quality information about Water related issues	M	M	H	M	M	M	H	M	L	M	M	M
Access to high quality information about Food security related issues	L	M	H	H	L	M	M	M	L	M	L	H

# Stakeholder Analysis

**Stakeholders were classified as primary and secondary based on the following definitions:**

- Primary stakeholders are those people and groups ultimately affected by the project. This includes intended beneficiaries or those negatively affected.
- Secondary stakeholders, are intermediaries in the process of delivering aid to primary stakeholders” and “those who are indirectly affected by the project.

# Primary Stakeholders

Stakeholder	Project Effect	Beneficiary/ Negatively Affected
General Population (represented by the Popular Committees)	<ul style="list-style-type: none"> <li>Satisfy their needs</li> <li>Provide solution for their problems</li> <li>Create job opportunities</li> <li>Raise awareness</li> <li>Promote sustainable development practices</li> <li>Increase resilience (related to climate change, energy-water-food scarcity)</li> <li>Enhance food security</li> <li>Empower women and youth</li> <li>Assist farmers</li> </ul>	Beneficiary
	<ul style="list-style-type: none"> <li>Provide alternative power sources</li> <li>Provide sustainable water resources</li> </ul>	Could Negatively affect cistern and generator owners
Local NGOs	<ul style="list-style-type: none"> <li>Build capacity</li> <li>Empowering</li> <li>Improve role</li> </ul>	Beneficiary
Municipalities	<ul style="list-style-type: none"> <li>Build capacity</li> <li>Alleviate burden related to energy-water-food problems</li> <li>Improve role</li> <li>Provide sustainable solutions</li> </ul>	Beneficiary

# Secondary Stakeholders

Stakeholder	Indirectly Affected/ Aid Delivery	How
ACS	Aid Delivery	Technical Support
MoA	Aid Delivery	Legislation Technical Support
MoEW	Aid Delivery	Legislation Technical Support
Center for Agricultural Guidance (MoA)	Aid Delivery	Technical Support Guidance
Electricite Du Liban (EDL)	Aid Delivery	Technical Support
GAPS	Indirectly Affected	Sale of products
Ecotech Solutions	Indirectly Affected	Sale of Products
Green Orient	Aid Delivery	Technical Support Guidance Awareness Campaigns

<b>Intellocomp</b>	<b>Indirectly Affected</b>	<b>Sale of Products</b>
<b>LARI</b>	Aid Delivery	Technical Support
<b>Green Plan (MoA)</b>	Aid Delivery	Technical Support Guidance
<b>EWBM (MoEW)</b>	Aid Delivery	Technical Support
<b>LCEC (MoEW)</b>	Aid Delivery	Technical Support
<b>MoF</b>	Aid Delivery	Funding
<b>MoET</b>	Aid Delivery	Commercial Agreements
<b>IDAL</b>	Aid Delivery	Funding
<b>Schools and Universities</b>	Indirectly affected	Raised awareness
<b>ESFD</b>	Aid Delivery	Funding Technical Support
<b>UNDP</b>	Aid Delivery	Funding Technical support

# Stakeholders classification According to Relative Influence and Importance to the Project

High Importance	<p><b>BOX A</b></p> <p>Popular Committees of Jdeidet El Chouf          Population of Jdeidet El Chouf and Semqanieh          Syrian Refugees          Jdeidet El Chouf- Baqaata Women Organization          Progressive Women’s Union – Jdeidet El Chouf          LANA Youth Organization          Al-Shouf Cedar Society / SBR          Green Orient          Schools and Universities          Farmers</p>	<p><b>BOX B</b></p> <p>Municipality of Jdeidet El Chouf          Municipality of Semqanieh</p>
Low importance	<p><b>BOX D</b></p> <p>Echotech Solutions Middle East          Green Alternative Power Sources          Water Cisterns Owners          Generator Owners          Association of Traders          Intellocomp          FAO          UNDP          Religious Notables</p>	<p><b>BOX C</b></p> <p>Ministry of Agriculture          Lebanese Agriculture Research Institute          Ministry of Energy and Water          Ministry of Economy and Trade          Ministry of Finance          Investment Development Authority of Lebanon          Establishment of The Water of Beirut and          Mount Lebanon          Electricite Du Liban          The Economic and Social Fund for Development          Progressive Social Party</p>
	Low Influence	High Influence

## Risk Assessment

- The legal, availability of land and/or lack of motivation.
- The dependence on political lobbying is in some cases a risk by itself.
- schools are cited as target groups, their active participation is contingent on timing events and understanding their schooling calendars.
- Media is also cited as a target group but needs to be monitored and well informed.
- Lacks of finances at the municipal level, and the inability for municipalities to raise capital for specific projects underscore the dependency on external funding source.



# Selection Criteria for pilot projects

- Should be owned by the municipality;
- Approved by the municipality for other local governmental departments;
- Should be within the allocated budget of the project; and
- In line with the objectives of the MINARET project.

# MINARET Project: WATER

- The purpose of the baseline study was to carry out a situational analysis for water and agriculture at the municipality level.



Identification of the existing policy related to the water and agricultural sector

- The boundaries of the study included:

- Jdeideh Municipality in Lebanon.



Carry out data collection and analysis of water situation to identify relevant benchmarks for water consumption, resources, treatment and reuse.

- The following points were addressed for each municipality:



Carry out data collection and analysis of current agricultural situation and investigate new and modern agricultural technologies that consume less water and energy.



Recommendation of Pilot projects and Capacity Building programs at the municipality Level.

# MINARET Project

## Bottom- up Approach

### Methodology of data collection

01

Literature Review from online sources, governmental institutions, and previous projects.

02

Meetings with relative Stakeholders

03

Field Surveys and Questionnaires

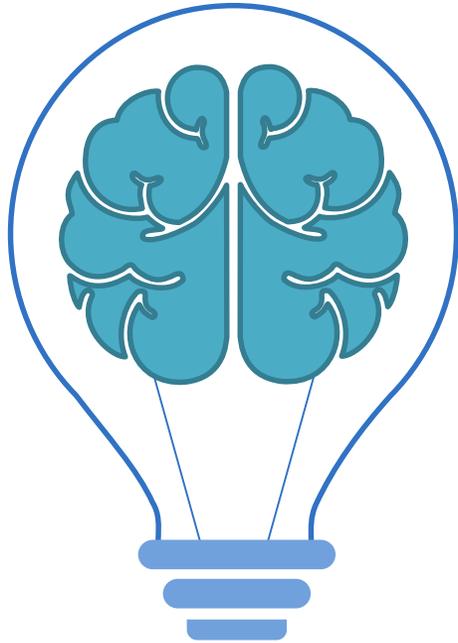
04

Focus Groups Discussions with the Community and Local NGO's



# MINARET Proposed Water Projects

## Recommendations for Pilot Projects



**Discussion**

[Intervention 1](#)

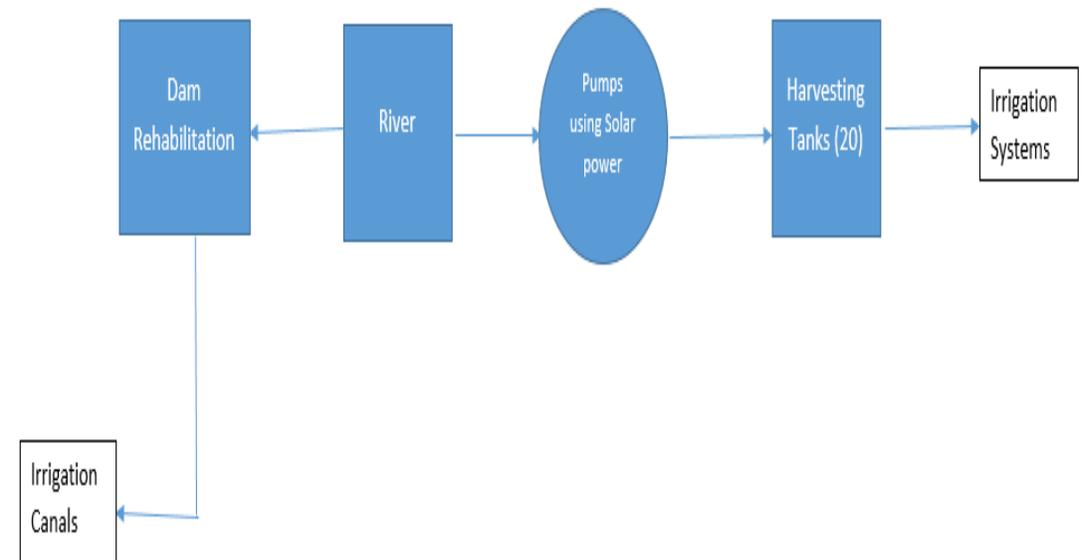
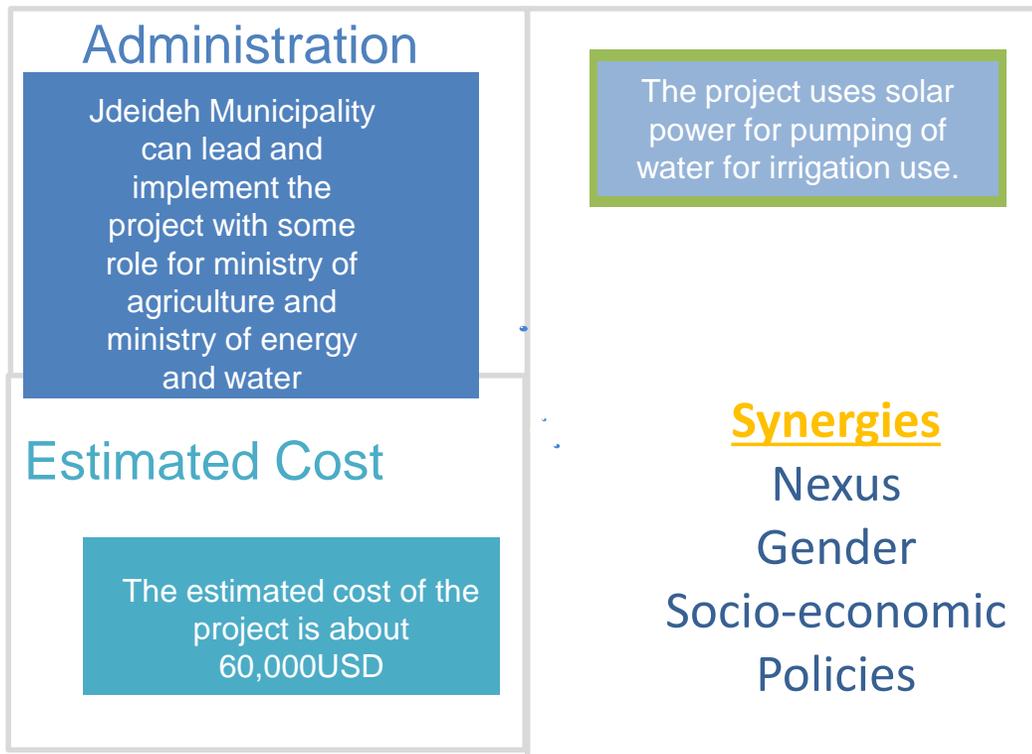
[Intervention 3](#)

[Intervention 2](#)

# MINARET Proposed Water Projects

## #1

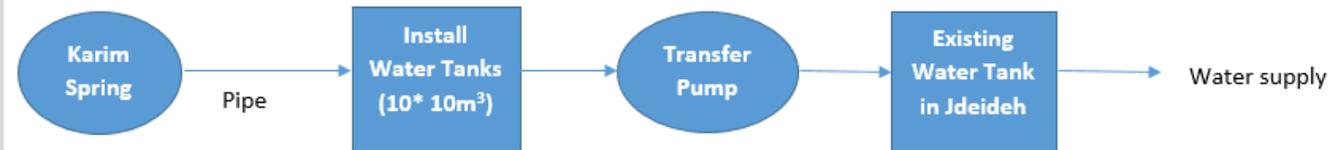
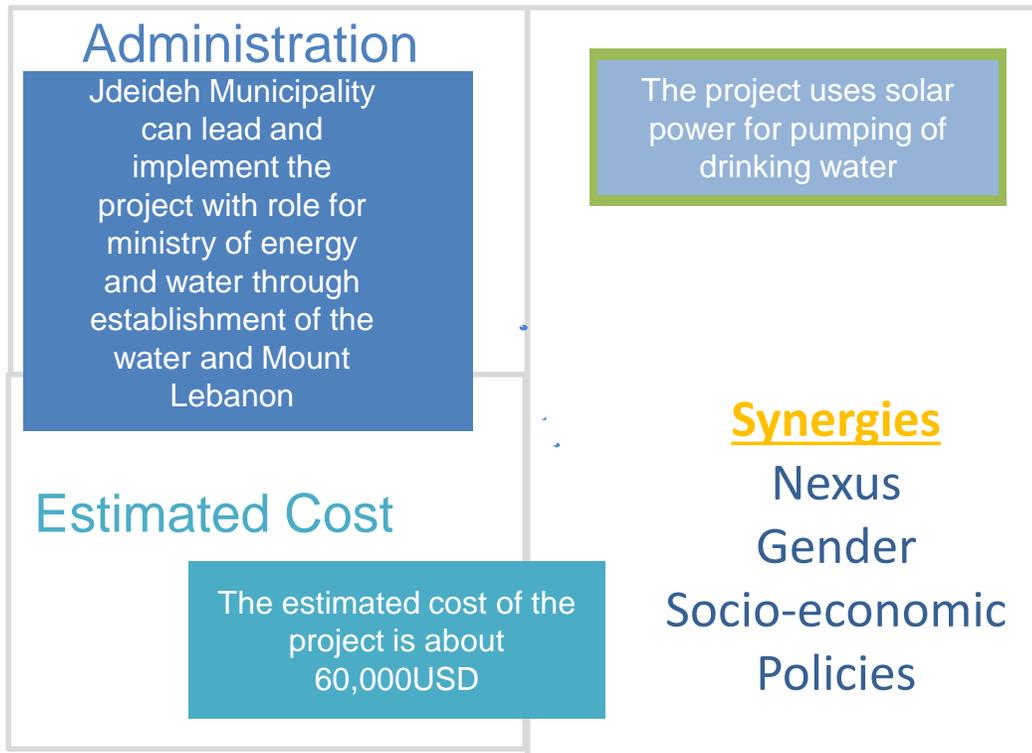
- **Project's Name: Lower area traditional Agricultural System & upper area**
- **Location: Along the Barouk River trail**



# MINARET Proposed Water Projects

## #2

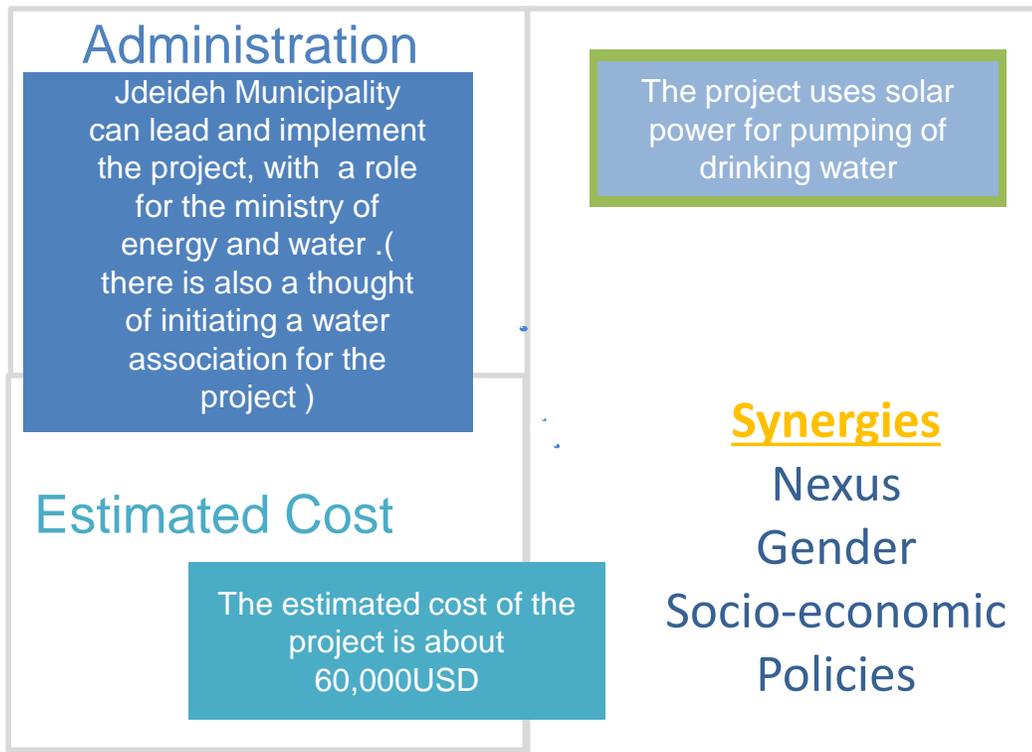
- **Project's Name:** Al Karim Spring Project
- **Location:** Near Barouk River



# MINARET Proposed Water Projects

## #3

- **Project's Name: Solar Hybrid Water Project**
- **Location: Near Barouk River**



### OPTIONS FOR TRANSFER OF WATER

1. Install pumping system fully operated on solar power.
2. Install photovoltaic diesel hybrid system (HP generators complemented with PV panels)

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# MINARET Project: Socio-Economic

- The purpose of the baseline study was to carry out a situational analysis for the socio-economic environment in each municipality.



Analyze and understand the demographics and socio-economic atmosphere of the municipalities

- The boundaries of the study included:

- Jdeideh Municipality in Lebanon.



Determine the usage and utilization of energy technology and water management and how they are connected to food security

- The following points were addressed for each municipality:



Gain better understanding of the community's knowledge, attitude and practice towards energy technology, water management and food security



Recommendations for potential small initiatives

# MINARET Project

## Methodology of data collection

01

Literature Review from online sources, governmental institutions, and previous projects.

02

Meetings with relative Stakeholders

03

Field Surveys and Questionnaires

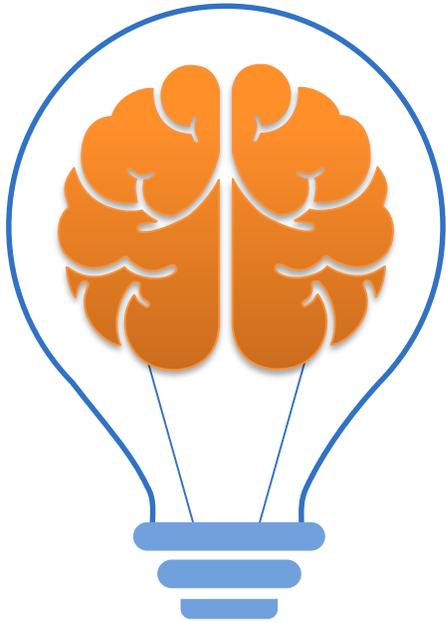
04

Focus Groups Discussions with the Community and Local NGO's



# MINARET Project

## Recommendations for small initiatives



Intervention 1

Intervention 2

# MINARET Proposed Small Initiative

## #2

- **Project's Name:** Revolving Fund (household level)
- **Location:** Multiple households

<b>Administration</b> Managed by Jdeideh Women's Society and with supervision from Jdeideh Municipality
<b>Estimated Cost</b> 20,000USD

The Revolving Fund program provides no-interest loans to households that seek to undertake solar energy/green initiatives.

The available types of initiatives are:

1. Grey Water Recycling and Reuse;
2. Drip Irrigation;
3. Photovoltaic Pumping;
4. Thermal Panels; and
5. Water Harvesting Wells/Tanks



# MINARET Proposed Small Initiative

## #1

- **Project's Name: Solar Farm**
- **Location: Jdeideh Municipality**

<b>Administration</b> Managed by Jdeideh Women's Society with supervision from Jdeideh Municipality
<b>Estimated Cost</b> 25,000USD

With oversight provided by the Jdeideh Municipality, the Jdeideh Women's Society will take charge in the implementation and execution of the large-scale solar panel system.

The generated electricity will be distributed to consumers as either a substitute for the current fusel fuel generator or as a supplement.

Generated revenue will then be used to create a revolving fund for community members for:

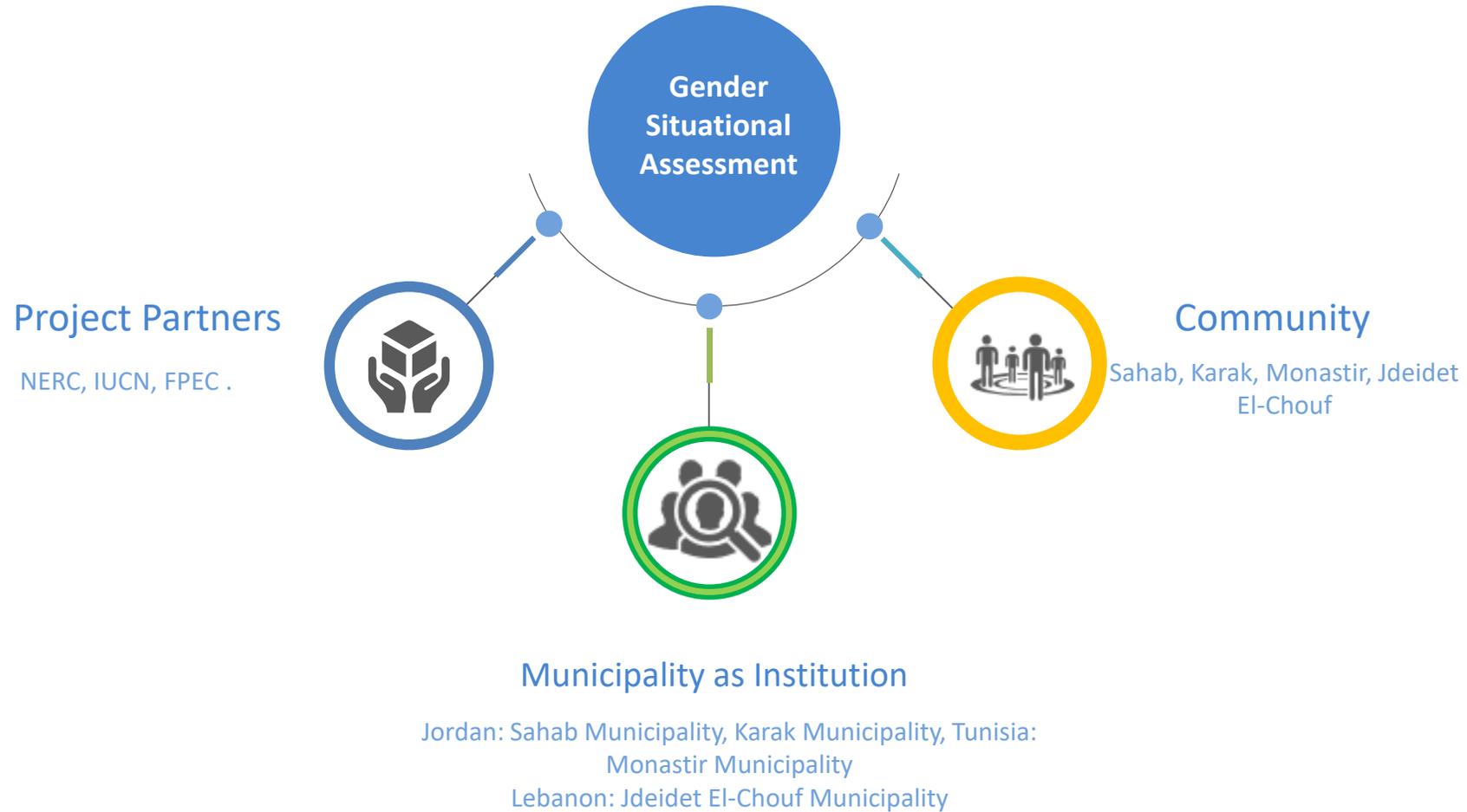
1. Maintenance of household plumbing;
2. Installation of grey water systems; and
3. Use of LED bulbs, among others.



# MINARET Project: Gender Assessment

## Gender Situational Assessment Coverage

Ensuring 3 levels are covered



# Methodology of data collection

## Applied Tools

01



### Project Partner Level

- Interviews
  - 1<sup>st</sup> Level - Self-Assessment Questionnaire
  - 2<sup>nd</sup> Level Self-Assessment Questionnaire
- 

02



### Municipality Level

- Literature review
  - Direct Interviews
  - 1<sup>st</sup> Level - Self-Assessment Questionnaire
  - Focus groups discussions
- 

03



### Community Level

- Variety of Gender Assessment Tools and Techniques
- Review of Existing Studies/Documents
- Focus Groups discussion
- Site Observation

# MINARET Project

## Methodology of data collection



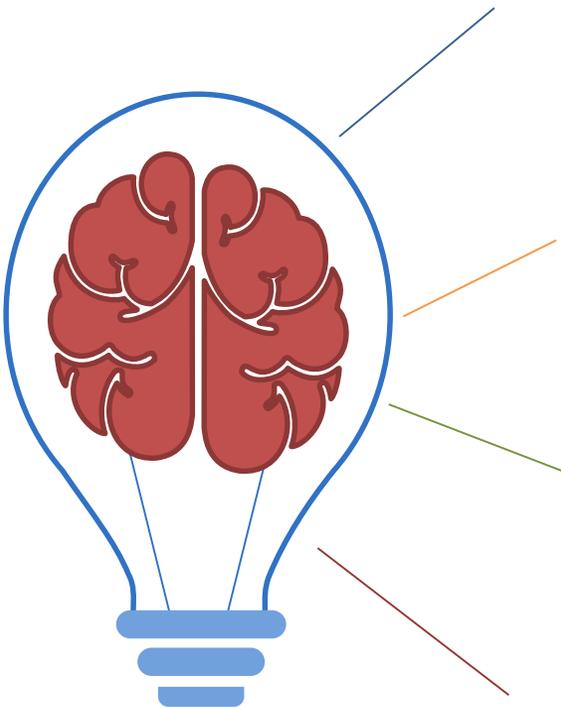
# MINARET Project

## Recommendations

Access to credit for energy has to improve women's poverty status in any significant way. So improving access to energy through small initiatives should be done in an integrated approach.

- In Lebanon the typical enterprises women invest in are food-processing, soap production, traditional crafts and most of them lack access to external markets.
- Create opportunities for women to enhance their technical competencies around energy, water and food management by conducting vocational trainings in partnership with national and local vocational centers (Lycee Technique).

Work with organizations such as Jdeideh Women Association and the municipality to promote and support income generation opportunities for small, women-owned business promoting water and energy saving technologies.



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1

Municipality  
Building

2

Wastewater  
treatment plant.

3

Solid Waste  
Separation  
Plant

4

The upper  
pumping  
station

5

Street lighting

6

Sport  
Stadium

7

Biogas  
system

8



# 1. Municipal Building



EE System

PV System



# Municipal Building –EE System

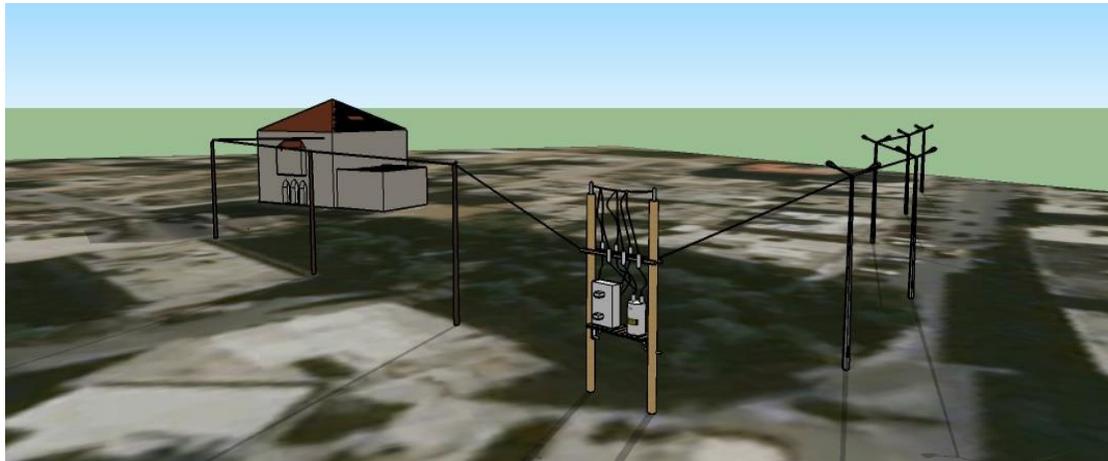
Energy Saving Measure	No. of Units	Annual Energy Saving (kWh/yr)	Annual Cost Saving (LBP)	Required Investment (LBP)	Payback Period (Years)
<b>Municipal Building</b>					
Replacing halogen light 100w with LED 18w	78	3748	1,124,416	1,174,290	1
Replacing CFL 85w with LED Round Panel 24w	12	429	128,685	280,020	2
Replacing CFL 24w LED Round Panel 12w	4	28	8,438	45,164	5.4
Replacing spot lights 30w with LED Spot lights 6w	16	225	67,507	84,272	1.2
Install solar water Heater	1	710	213,000	602,196	2.8
<b>Total</b>		<b>5,140</b>	<b>2,185,942</b>	<b>2,185,942</b>	<b>12.4</b>

Expected saving:  
**5,170 (Kwh/y)**

# Municipality Building –PV system

01

- **15 kWp** Grid connected system with battery storage to supply the Municipality Building and the main **road street lighting** or the **Park**.
- The system generates/saves approximately **23,400 kWh/year** with an investment of approximately **67,889,000 LBP** and the Payback period will be **11 years**.



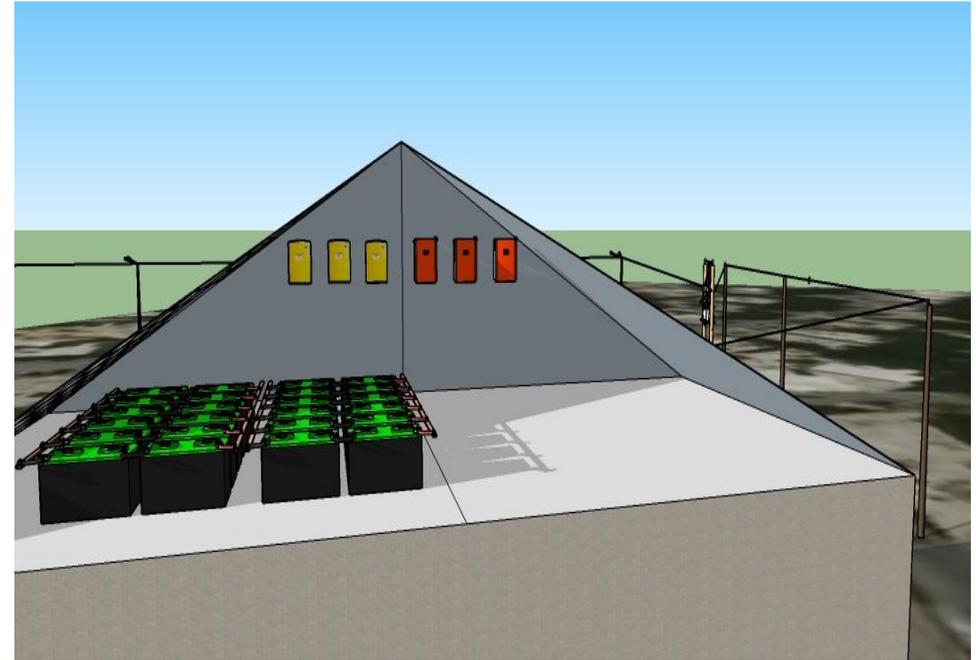
**Street Lighting**



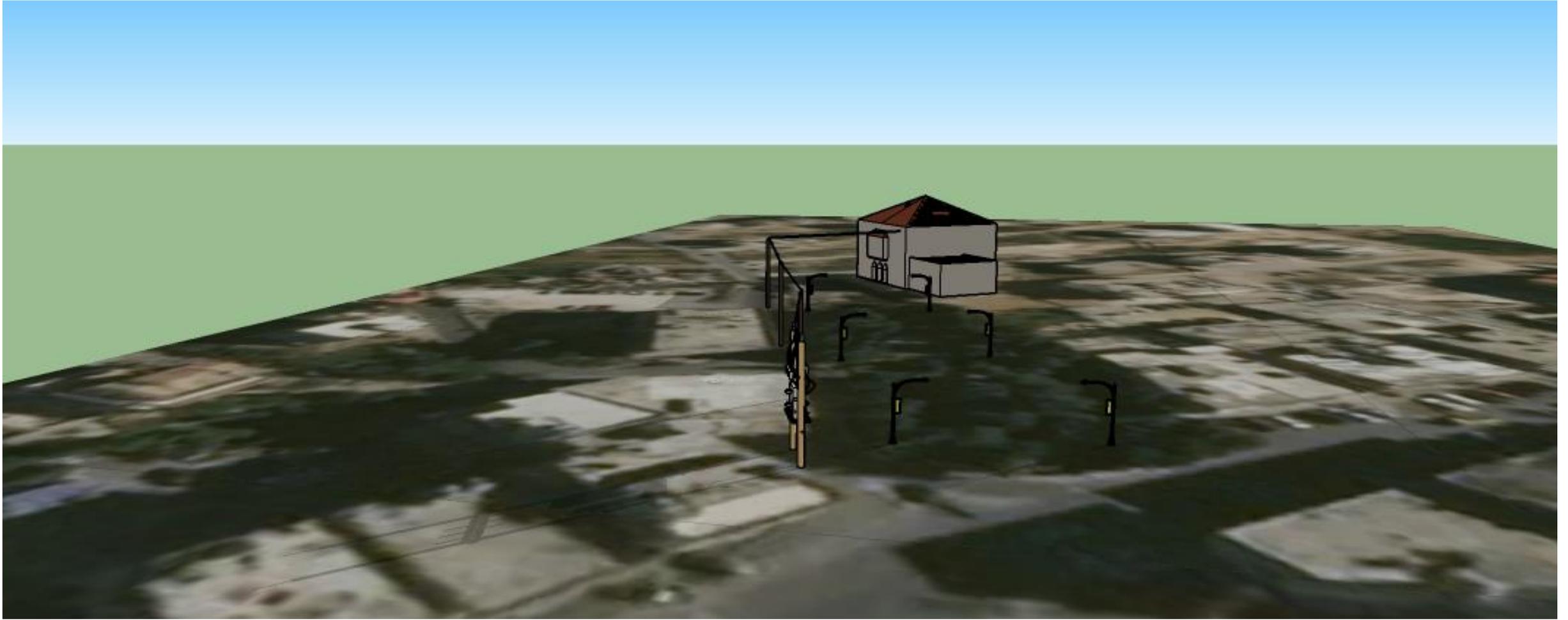
02

- Coupling the building loads and the lighting load in one system hosted by the municipality building is deemed as the simplest solution.

The generated energy can supply the municipality building and charging the batteries during the day, and it can supply the street lighting at night.

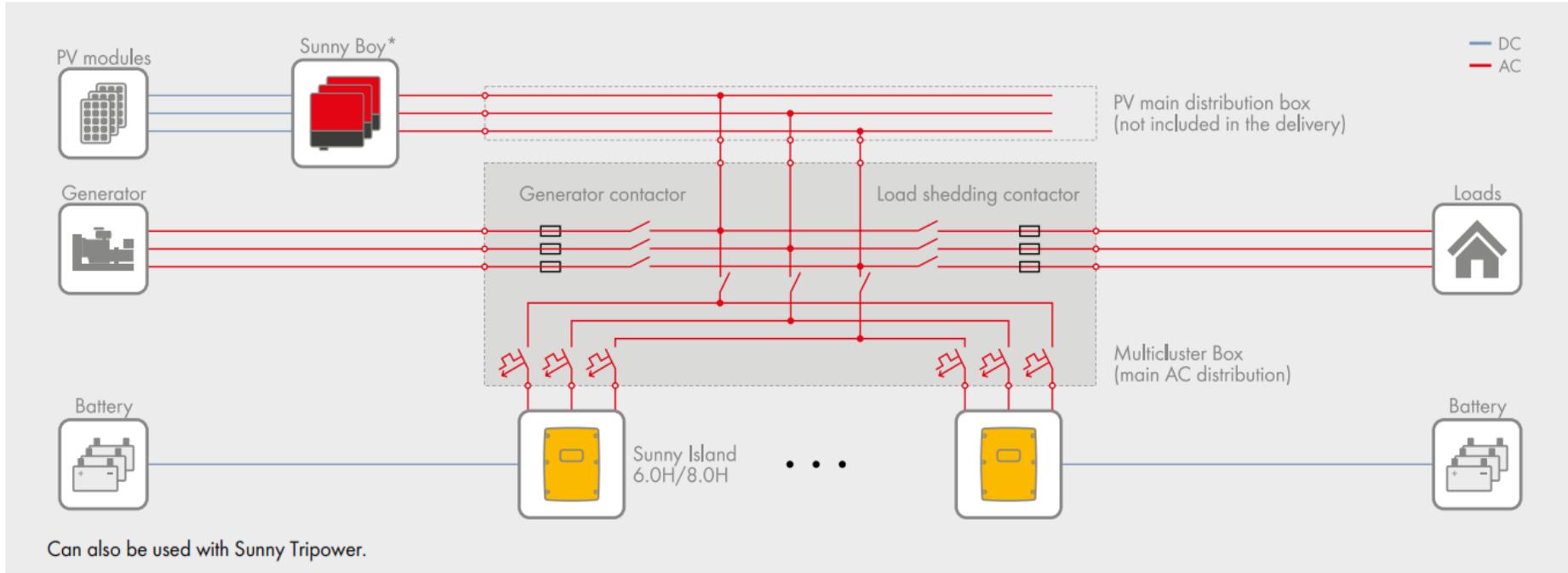


# Park

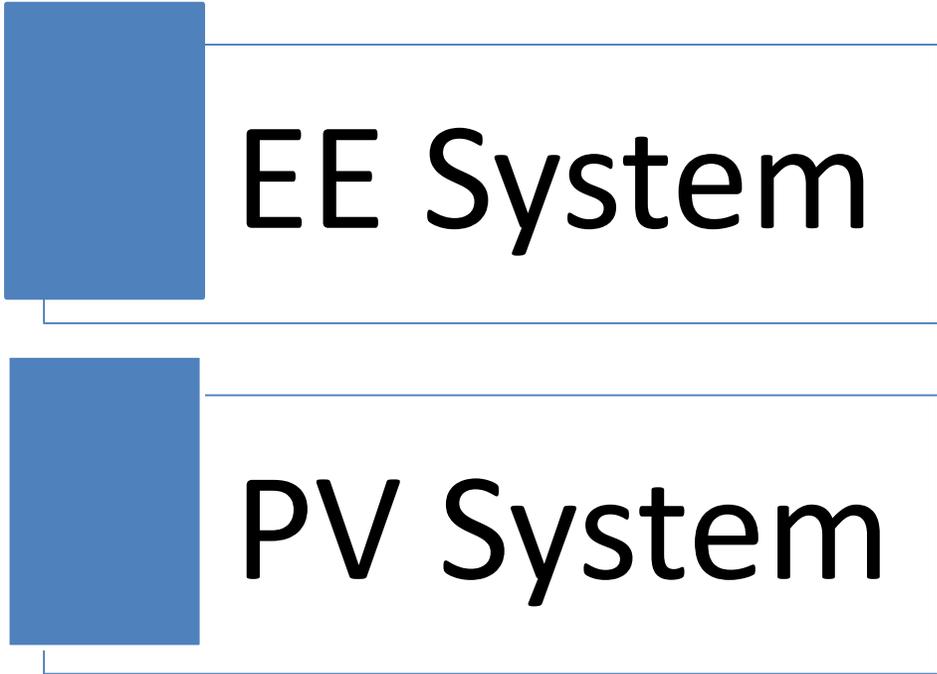


04

The system could be connected either to the grid or to the diesel generator.



## 2. Waste Water Treatment Plant



EE System

The diagram consists of two vertically stacked rectangular boxes. Each box has a solid blue vertical bar on its left side and a white area on the right containing text. The top box is labeled 'EE System' and the bottom box is labeled 'PV System'. The boxes are connected to a common vertical line on the left side.

PV System

# Waste Water Treatment Plant –EE System

Energy Saving Measure	No. of Units	Annual Energy Saving (kWh/yr)	Annual Cost Saving (LBP)	Required Investment (LBP)	Payback Period (Years)
<b>Wastewater Treatment Plant</b>					
Replace compressor rather than aerobic mixture	1	140,160	35,040,000	7,527,511.18	1
Build receiving tank with capacity 500 m <sup>3</sup>	1	4320	1,296,000	7,527,511.18	5.8
<b>Total</b>		144,480	36,336,000	15,055,022.3 6	6.8

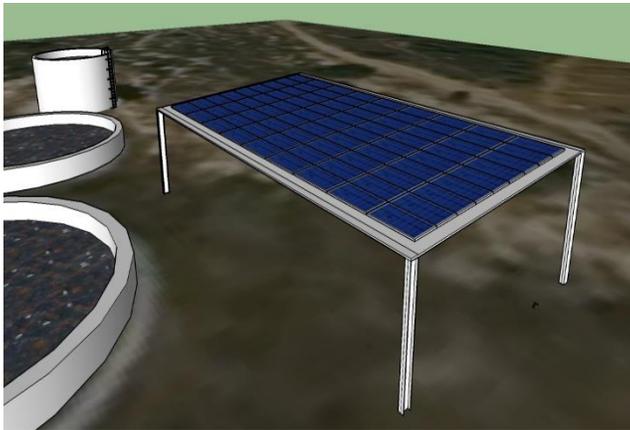
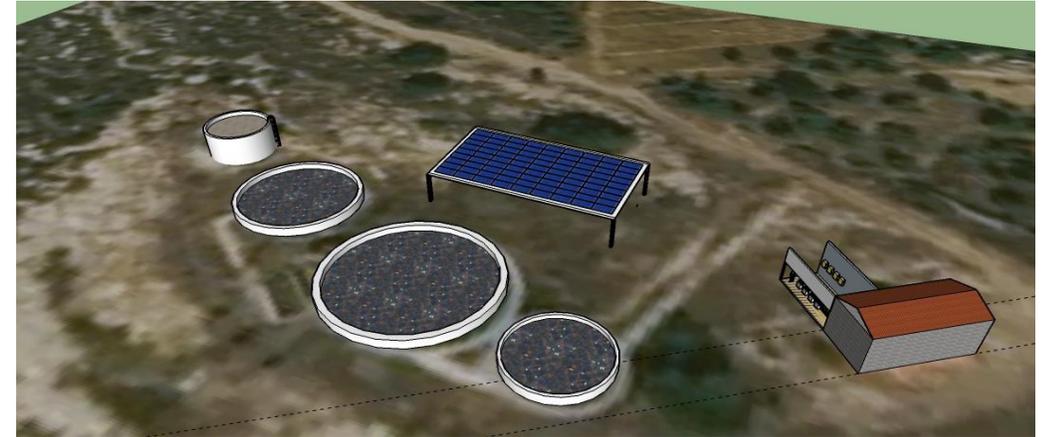
Expected Energy Saving:  
126,920 (Kwh/y)



# Waste Water Treatment Plant –PV System

01

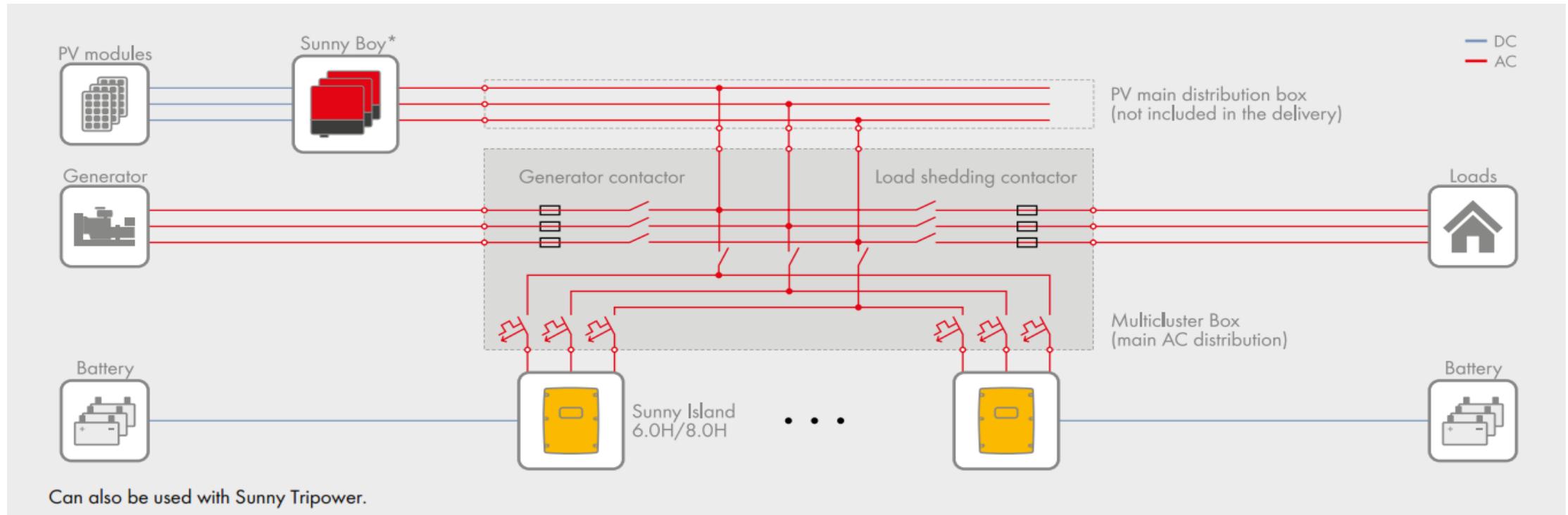
- **6kWp** of Photovoltaic system can be installed as Hybrid On-Grid system with storage to power the loads in the station.
- The system generates/saves Approximately **9,360 kWh/year** with an investment of approximately **27,156,000 LBP** and the Payback period will be **7.5 years**.



02

The Photovoltaic system can be installed as a canopy.

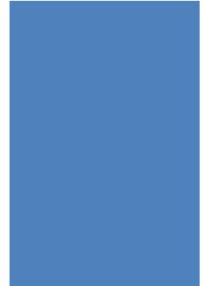
This system also could be connected either to the grid or to the diesel generator.



# 3. Solid Waste Separation Plant



EE System



PV System

# Solid Waste Separation Plant –EE system

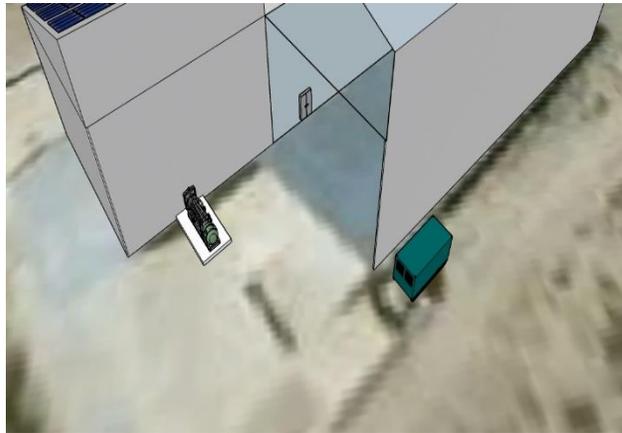
Energy saving opportunity	No of Units	Annual Energy Saving (KWh/yr)	Annual cost saving (LBP)	Required Investment (LBP)	Payback Period (Years)
Replacing Metal halide lamps (400W) with LED Flood Light Fixture (180W)	4	3258	977448	1705956	2



# Solid Waste Separation Plant –PV system

01

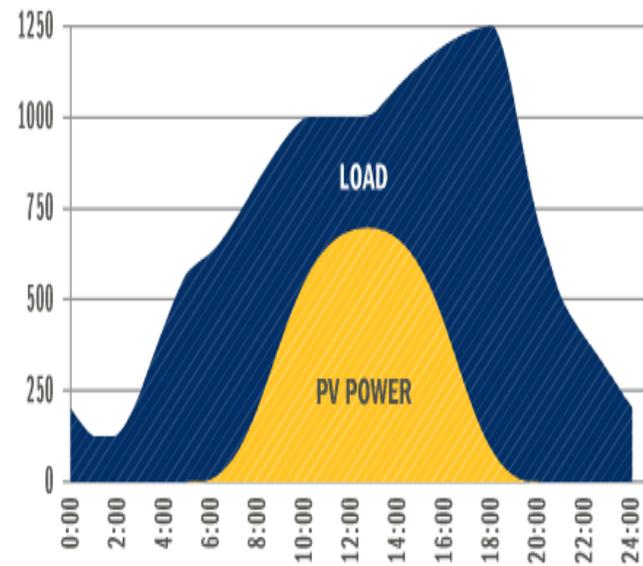
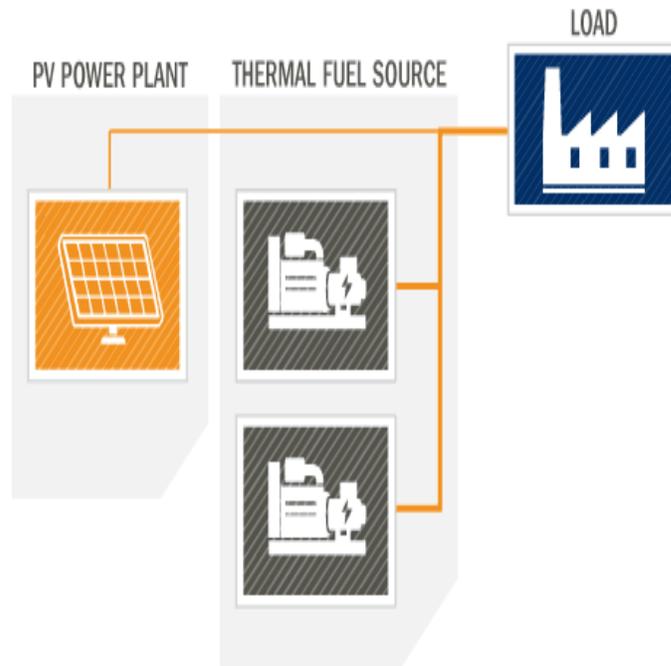
- This plant is operating using its own Diesel Generation Plant with capacity of **250 KVA**.
- A fuel saving Photovoltaic system with capacity of **70 kWp** can be installed as a secondary power supply.



02

- The system generates/saves approximately **109,200 kWh/year** with an investment of approximately **316,815,000 LBP** and the Payback period will be **3 years**.

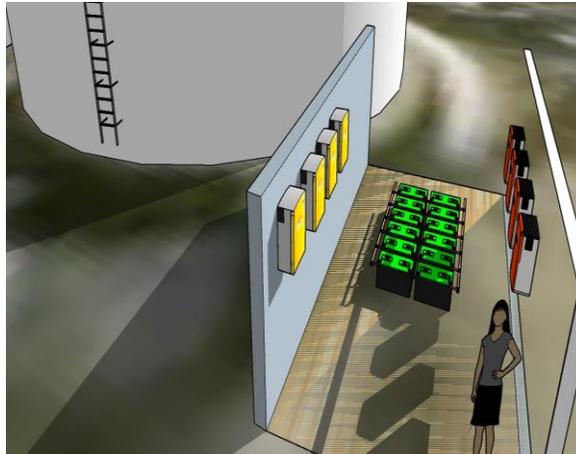
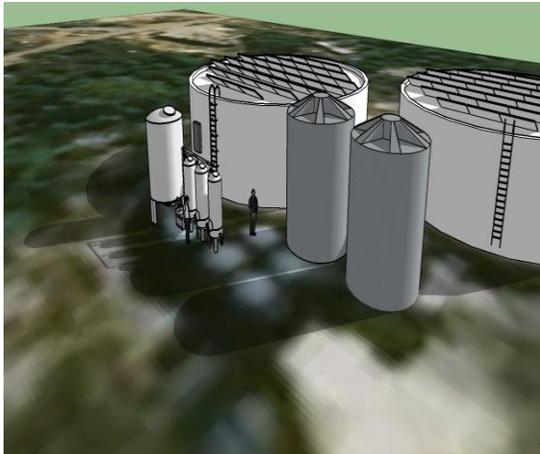
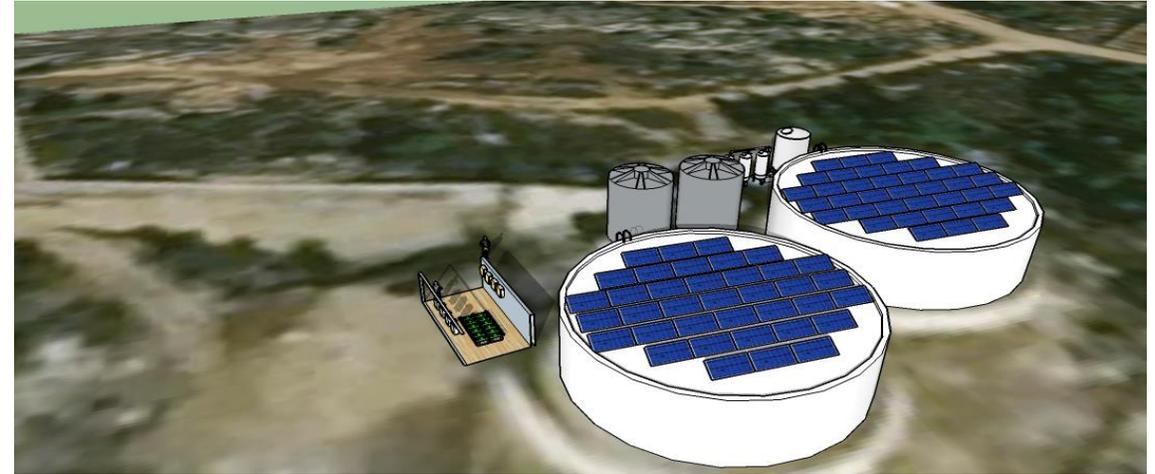
- This Hybrid system simply connects to the AC bus to reduce the fuel requirements of the existing generators.
- Using this methodology, the fuel consumption will be reduced which leads to save money without affecting the reliability of the source of power



# 4. The Upper Water Pumping Station

01

- This Station requires a capacity of **20 kWp** of Hybrid Photovoltaic system with Battery storage which can be installed on both of the storage tanks' roofs.

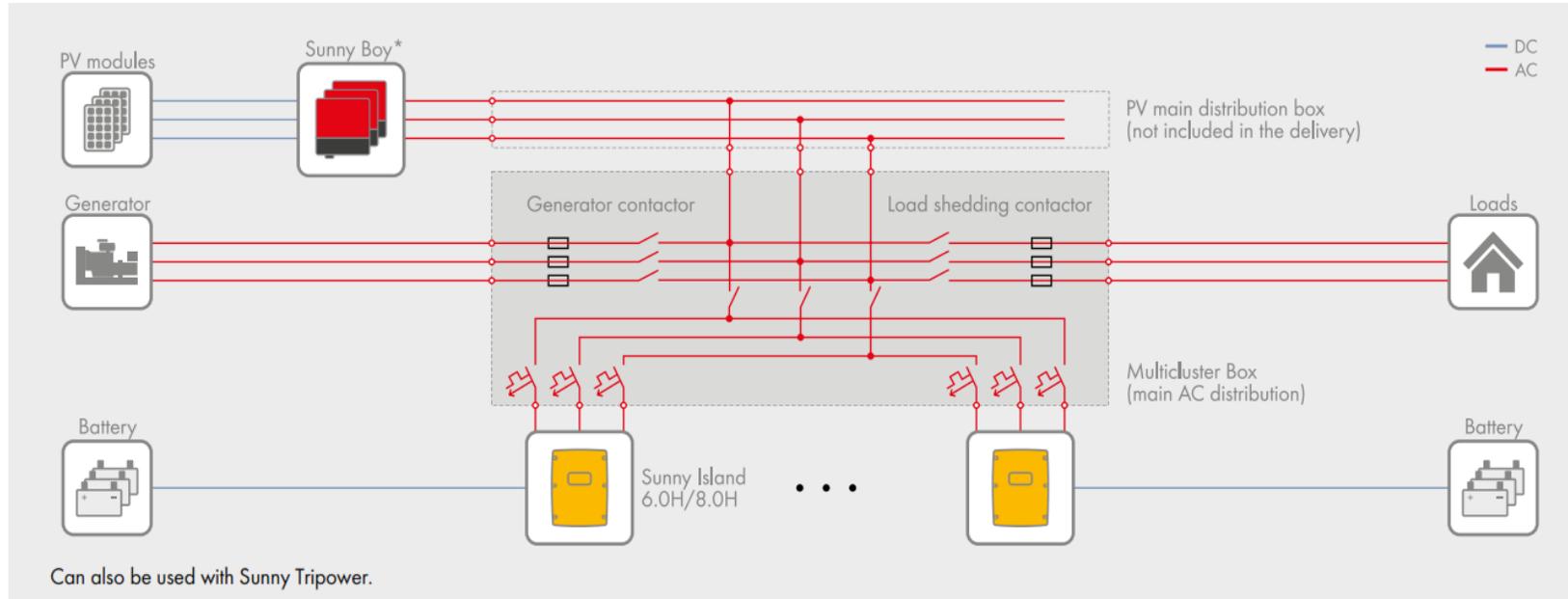


02

The system generates/saves **31,200 kWh/year** approximately with an investment of approximately **90,519,000 LBP** and the Payback period will be **9.7 years**.

03

The system could be connected either to the grid or to the diesel generator.



# 5. Street Lighting

Energy Saving Opportunities	No. of lamps to be replaced	Annual Electric Energy Saving (kWh)	Annual Electrical Saving (L.L.)	Required Investment (L.L.)	Simple Payback Period (Years)
Replacing High Pressure Sodium lamps (HPS) 250W with LED fixtures 100W	172	100,448	32,919,442	103,200,000	3.1



## 6. Sport Stadium

The existing lighting system is efficient and there is no need for retrofit.



# 7. Biogas System

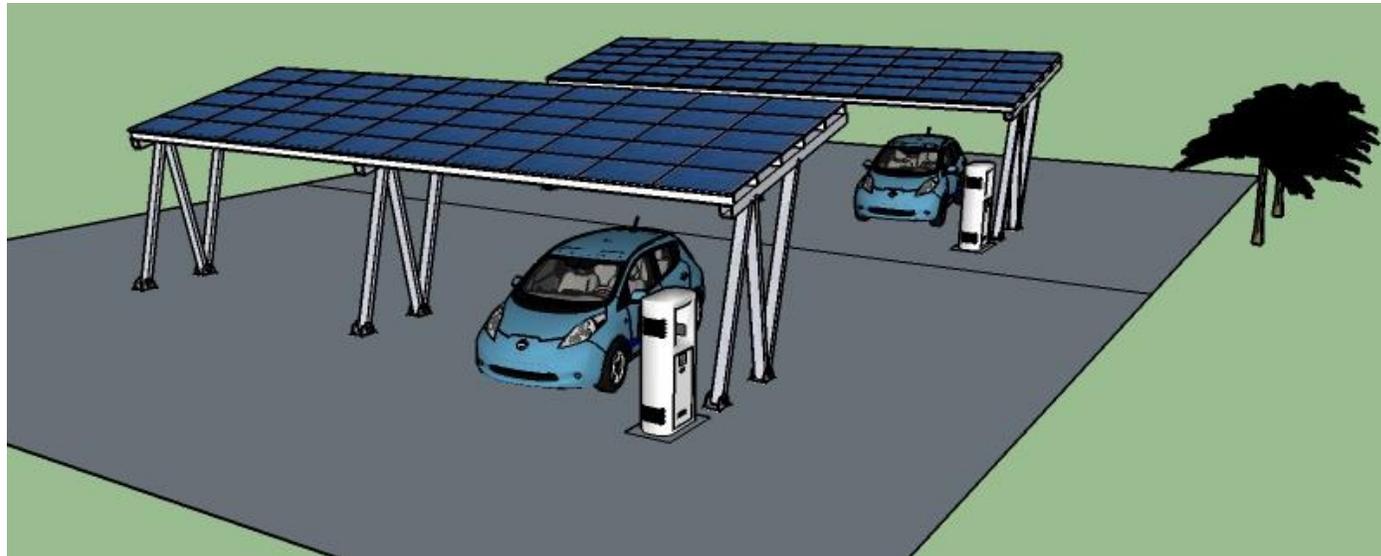
Item	Description
Biogas plant electrical capacity (KW)	200
Total expected amount of biomass (tons/year)	2226
Amount of Methane (m <sup>3</sup> /year)	154,800
Methane Energy content (Kwh)	1,548,000
Electricity product (Kwh/year):	67,725
bio-fertilizer (tons per annum)	365,880



# 8. Electric Vehicle

Electricity consumption

**10 – 22 KWh/100 km**



# Let us Think together for a Change

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نفكر معاً من أجل التغيير نحو تنمية مستدامة

## Thank you



Team