



المجلس الفلسطيني للبيئة الخضراء
Palestine Green Building Council

Enhancing the Resilience & Energy Efficiency of Palestinian Refugees through Building Retrofitting

Improving EE in Qaddura Camp/ Pilot Case Study

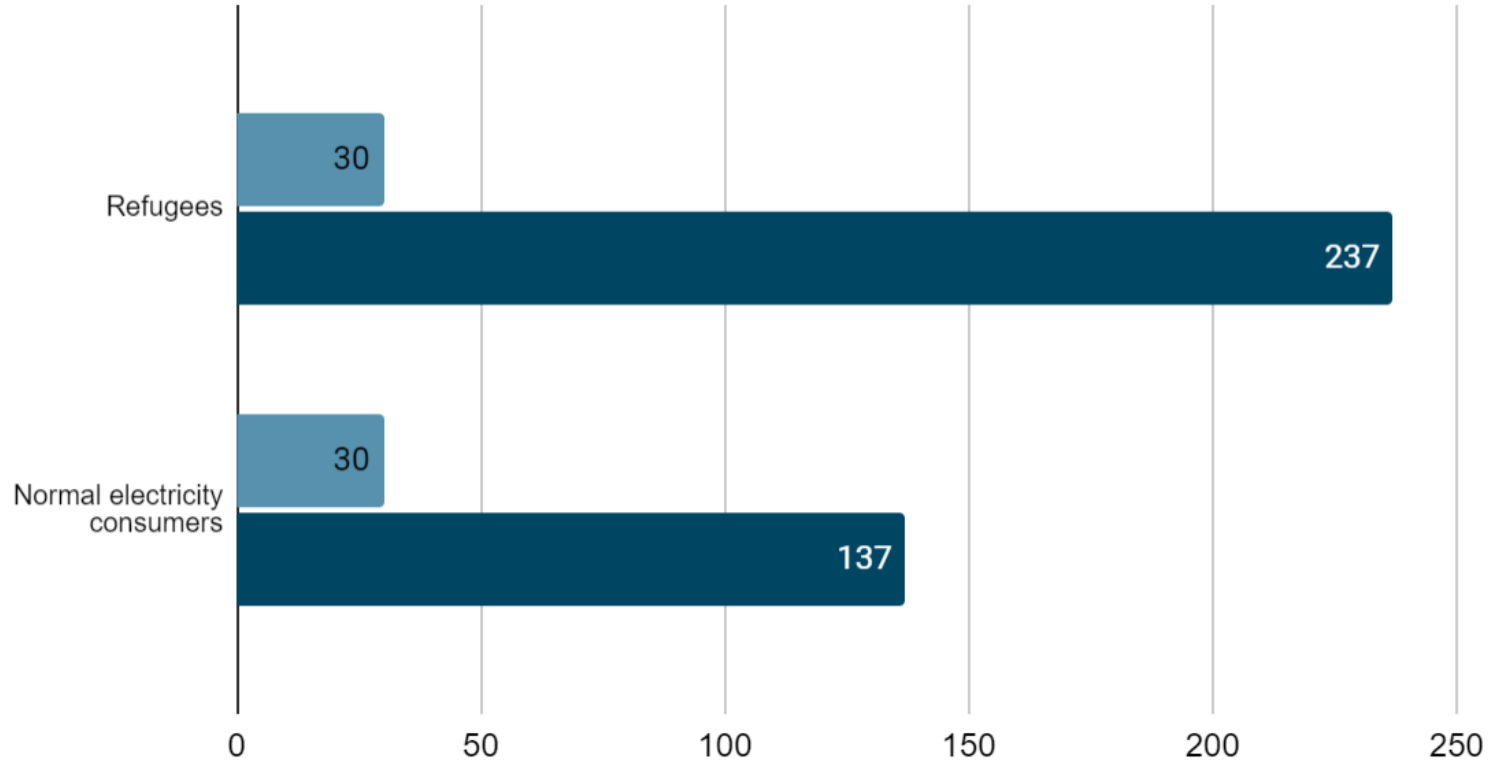
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Problem!

According to the Palestinian Energy Authority and Natural Resources (PENRA):

- **Electricity losses** in Palestine exceeds **30%** of total consumption in some areas;
- **Low collection rates** for electricity, especially in refugee camps, is affecting the distributors' performance.
- **Temporary buildings were built for refugees**; with low quality and below-standard living conditions.

■ Days ■ Consumption kwh per capita



Authorities Recommendation for Solving the Problem

The Palestinian Authority recommended establishing solar panel farms in order to handle the refugee camp's electricity consumption and to cover the resulting costs on the long-run. (401,670 MWh/yr.) 3000 Donum.

Possible? Yes..

Effective/strategic?!



Our Suggestion – Incentives Package

Retrofitting Implementation: Applying retrofitting have multiple social, economic, and environmental benefits;

- Reducing energy consumption;
- Reducing the pressure on distribution companies;
- Reducing net lending;
- Reducing CO₂ emissions;
- Reducing misbehaviours (pre-paid meters).

Problem: Lack of Payments by Refugees Camps

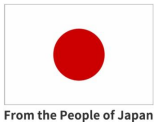
EE Project Strategy

Incentives
EE & Retrofit

Bottom-up
Approach

Intervention
Technical &
Humanitarian

Institutional
Cooperation



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Qaddura Refugee
Committee

PENRA Reaction

Very supportive!

- Provided the needed data;
- Implemented Energy Audits;
- Reviewing & validating findings.

Introduction

Sustainable Energy Transition

- Qaddura Refugee Camp, established in 1948.
- Beneficiaries: 14 houses - 70 people



Our Objectives

1. To **reduce energy consumption with (20%)**,
2. To **introduce energy efficient solutions and retrofit concepts** to the existing buildings and to measure their impact on the long run (in \$ as well as in CO2 emissions);
3. **Incentivize people** to pay their bills while **improving their resilience** and the quality of their living conditions;
4. To **apply a case study** for the project's processes & data, and to use it as a core stone for a future extension of the project.

Trainings & Supervision

1- Contractors and site supervision team

2. Contractors & Subcontractors

Online & offline Retrofit training



Building Envelope Retrofits
تأهيل غلاف المباني القائمة

Wijdan Al-Sharif
Palestine Green Building Council
وجدان الشريف
المجلس الفلسطيني للأبنية الخضراء

Camps retrofit session March 20 2022

Fig.3 Zoom training with contractors



Project Interventions Overview

Replacing Windows



Replacing Doors







Wall Insulation works





External Walls Insulation Works





Roof Insulation





Additions; new Partitions & Doors





Bathroom Works



Maintaining Structural Elements



Installing Electric Meters, Replacing lights, & Maintenance works

- **Electrical maintenance** of sockets, networks, bulbs ...etc.
- Replacing lights with power saving LED's









Replacing Fridges

- **Replacement** of current fridges with power saving ones,
- Destroying the existing compressors, **recycling** other parts
- Based on **50% contribution** by the owner



Solar Systems

- PV panels, or water heater **tanks** where needed
- Full Solar Water **system**

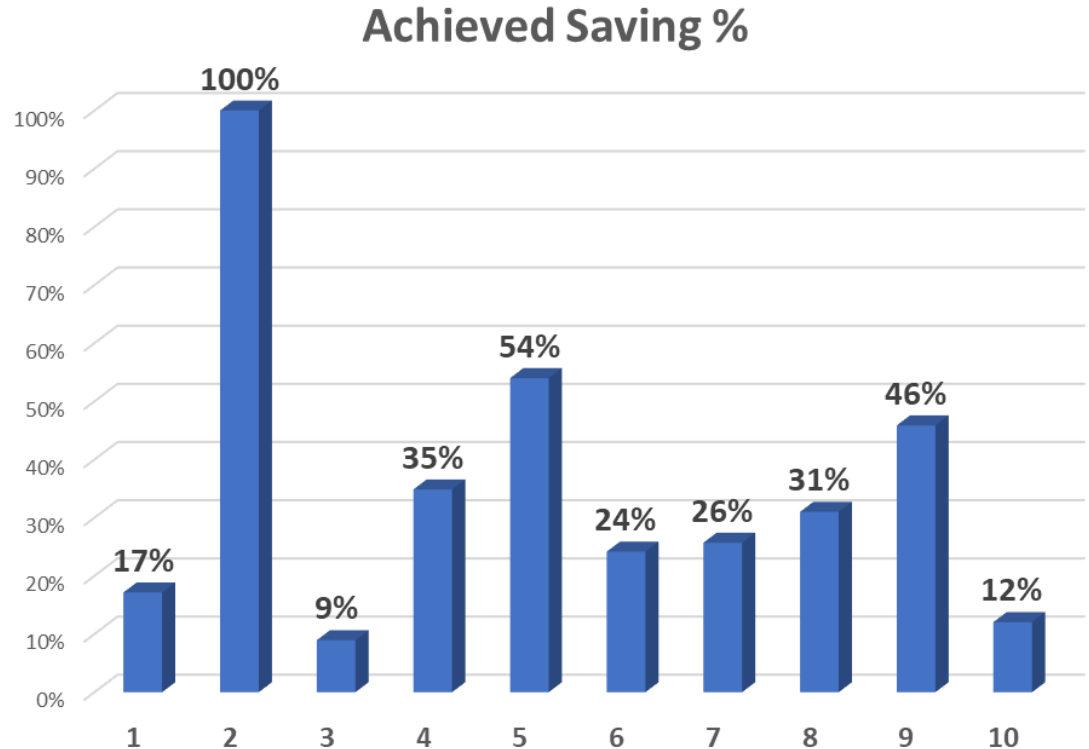


Social Gains

1. **Young Male/Female experts role and involvement (13 Female: 7 Male);**
2. Beneficiaries' living conditions improved (pre & post social survey);
3. More affordable electricity bills;
4. Spread awareness within the targeted community;
5. Fixing Behaviour.

Technical Achievements

1. Case Study successfully implemented;
 2. Energy efficiency through building retrofit to maximize the returns & sustainability was tested.
- Comparison of Aug. 2021 VS Aug. 2022



Accreditations



Won the Mediterranean Climate Change Adaptation Awards “Construction and Building Sector” Through MeetMED - 2 Project Morocco on May 11, 2023

Accreditations

- Applicant: PENRA
- Arab Energy Efficiency Day (May 21)
- Competition #11
- “The Best Integrated Energy Efficiency Solutions to Contribute to Crisis Recovery in the Arab Region”.
- Egypt on May 21, 2023

- جائزة: أفضل حلول كفاءة الطاقة المتكاملة للإسهام في التعافي من الأزمات في المنطقة العربية.
- المسابقة الحادية عشرة لليوم العربي لكفاءة الطاقة 2023
- بإشراف المجلس الوزاري العربي لكفاءة الطاقة - جامعة الدول العربية
- مصر: 21 أيار من العام 2023



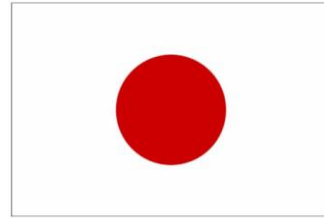
Scaling up!

Currently working on preparing for the second phase!

Thank You!



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From the People of Japan

