

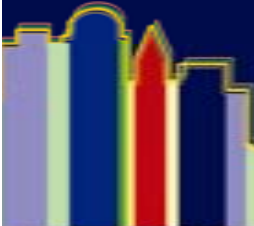
صندوق تطوير وإقراض البلديات  
Municipal Development & Lending Fund



**Municipal Development and Lending Fund of Palestine**  
**MDLF**  
**Municipal Development Program**  
**(MDP)**

**Supporting Municipalities Become More Energy  
Efficient – A Pilot Initiative in Palestine**  
**March - 2010**

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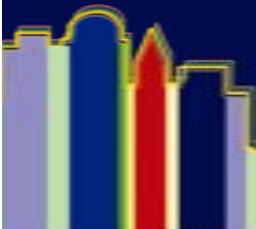


# Population

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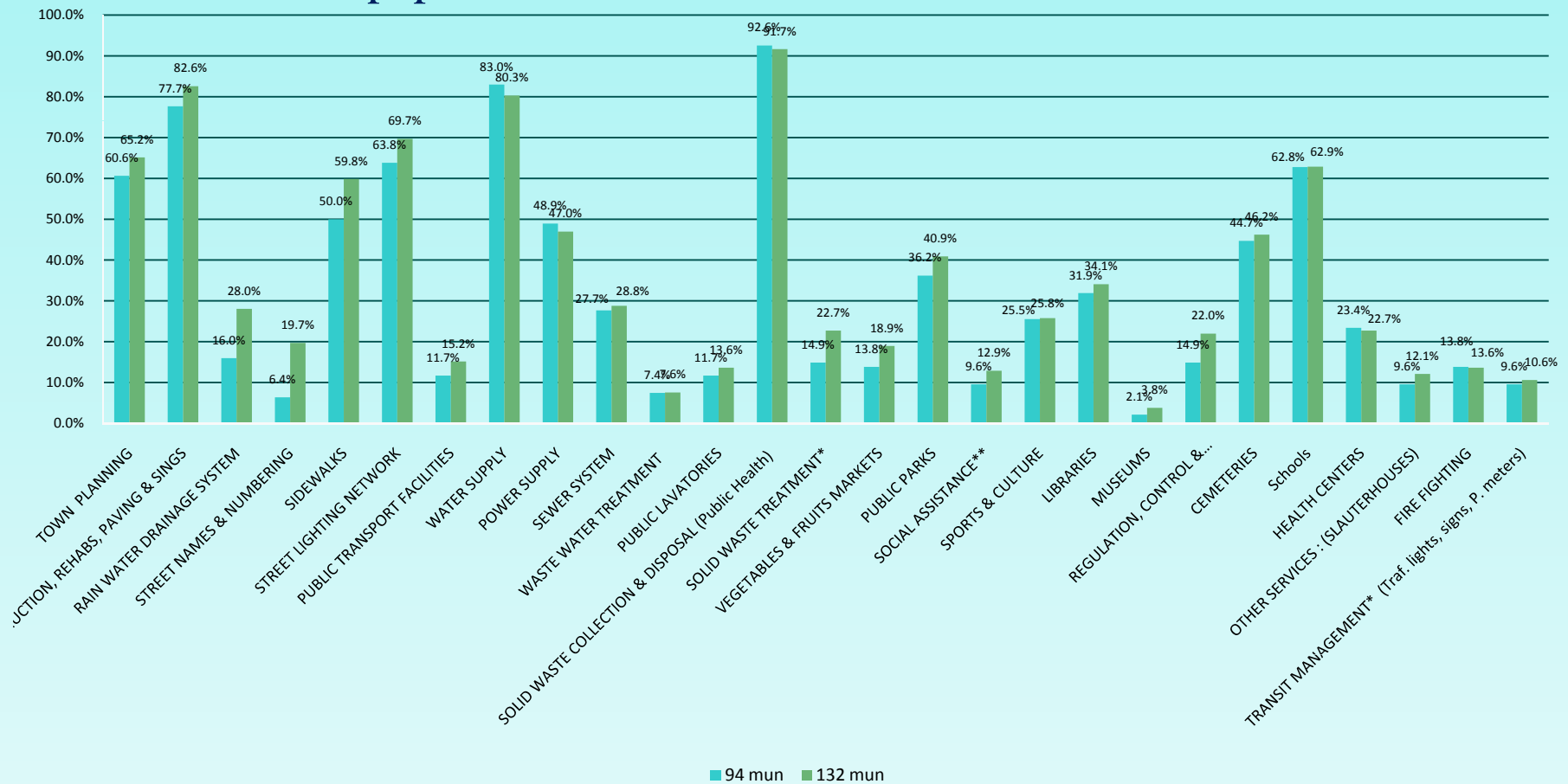


- West Bank: 2,600,000  
Gaza Strip: 1,500,000  
Total : 4,100,000
- These numbers include Palestinians in Palestinian territories only .



# Background

Palestinian Municipalities pre-date the PA and provide key services to 74% of the total population



# Background

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- Difficult political situation in Palestine (under occupation).
- Low per capital income.
- Limited authority on vital sectors leave narrow margin to play in electricity supply side.
- Lack of qualified and trained EE engineers for the time being.



# Background

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- For many of the services they provide, there is limited cost recovery.
- Other sources of revenue are limited and therefore, municipalities have high deficits.
- Due to on going conflict and rising poverty levels, the ability of municipalities to introduce fees is constrained.
- Municipalities interested in introducing savings to their ongoing expenditures.
- Hence, the Energy Efficiency pilot.

# Background

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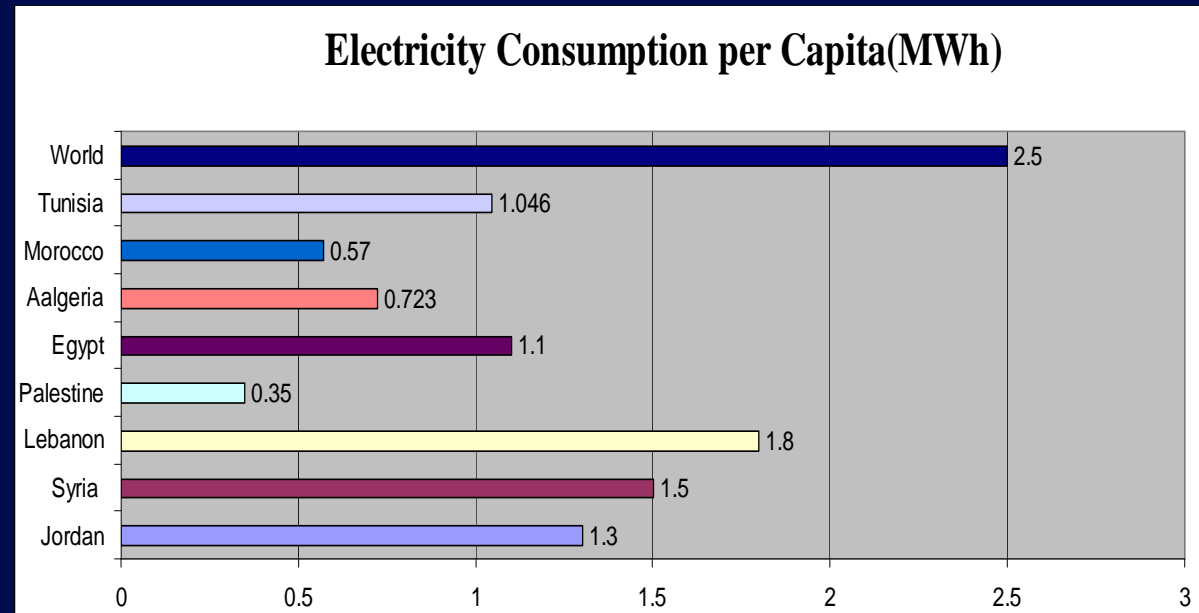
- The Energy Efficiency Pilot is part of the MDLF's Municipal Development Program (MDP).
- The MDP provides performance based grants for capital investments and Technical Assistance to enhance management practices.
- The MDP also includes a component for promoting innovation and efficiency. The program is testing innovative approaches to enhance municipal revenue generation by reducing operational costs through the promotion of energy efficiency initiatives.

# Electricity Consumption

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- Palestinian per capita consumption is considered the lowest in the region.
- Remarkable decline in electricity consumption since Sept/2000 (2nd Intifada) as a result of negative growth rate of the domestic product and the high level of poverty.



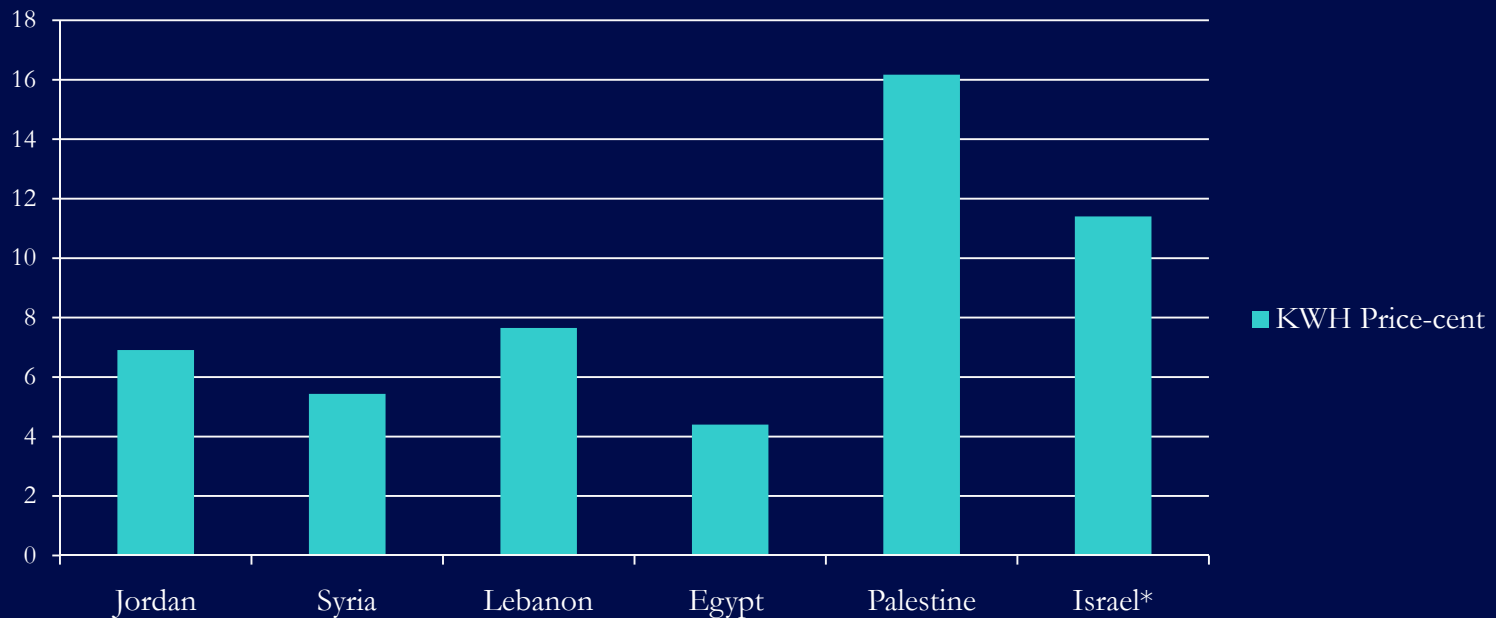
# Electricity Prices Comparison

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However, cost per KWH is among the highest in the region because over 90% of the electricity is imported

Cent\KWH





# Energy use in cities

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## Global indicators ( ref:World Energy Outlook 2008)

- Cities contribution to 67% world's primary energy demand and 71% of global carbon emissions.
- Energy use in cities expected to grow to 73% by 2030.



## Current Status

- Palestinian municipalities spent 2.56% (2070 and 2.31% (2008) on street lighting. (Palestinian municipalities spent 1.5 million \$)
- Direct strong city government on water supply, wastewater treatment, solid waste management, public lighting (street, traffic , parks..) and public buildings.
- Lack of adequate planning and design methods .
- Limited technical and risk management skills.



# Expected Results

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- Reducing the targeted street lighting electricity consumption by 30%
- Reducing the targeted pumps electricity consumption by 25%.
- Reducing the targeted buildings energy consumption by 35%.
- Reducing the annual maintenance cost for the three sectors by 40%.
- Improving the municipalities and MDLF staff, skills in EE applications.
- Encourage both selected and not selected municipalities to invest in EE applications.
- Determining the feasibility of using renewable energy resources like solar energy in street lighting and water heating in public buildings.

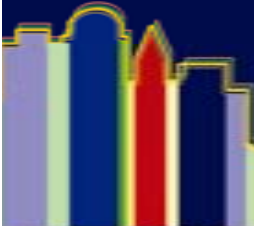


# Impact on Poverty

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- Savings will encourage the municipalities to cover social services programs , especially the poor's programs.
- Reducing the cost of water pumping can be reflected on the water prices.
- Public awareness activities will help the consumers to reduce the electricity consumption cost.
- EE investments will create new jobs in the cities.



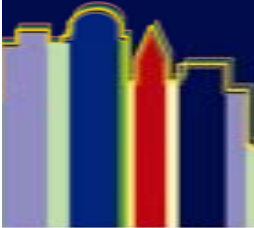
# Project Activities

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## Key Activities of the Pilot

- The pilot was designed with close guidance from ESMAP (international consultant), providing technical assistance to MDLF
- First mission of ESMAP International Consultant at design stage
- Subsequent missions at key points during implementation
- Continual remote guidance and TA to MDLF staff

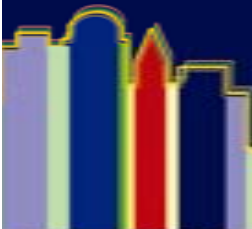


# Project Activities

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- International firm (Energy Management Services - Jordan) to carry out energy audit of pilot municipalities. Final reports to include summary of investments in all municipalities for comparison.
- Procurement and installation of equipment based on auditors recommendations.
  - Large municipalities – 150,000 to 300,000 \$
  - Small municipalities – 50,00 to 150,000 \$
- Measurement & verification of use of new technology
- Evaluation of the process and Dissemination of knowledge to other municipalities.



# Project Activities

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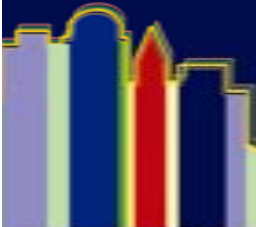


Two Large cities population >25,000 were selected:

Two small municipalities (population < 25,000):



- **Selection criteria :**
  1. Absolute electricity consumption – 40%
  2. Electricity cost as x% of operating budget – 40%
  3. Track – record of implementing MDLF projects – 20%



# Project Activities

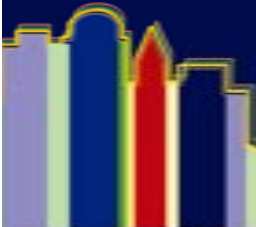
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## Selected cities

### 1- Hebron

- **Street lighting;** Ein Sarah street, Korbet Zahda (Multiple Streets- 4-6 km)
- **Water \sewage pumps,** Beir El-Safee WPstation, Al-Rameh Sewage Station, El-Hesba Sewage Station
- **Public Buildings:** Slaughter house, Municipal Building and Children Cultural Center (Isa'ad El-Tofolah



# Project Activities

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## 2- Qalqilia

- **Street lighting;** Al-Gharbee, Al-Sabe'e and Tulkarem Streets
- **Water Pumps;** Slaughter House pump, Sewage Pump
- **Public Buildings;** The public park (zoo), Municipal Building



## 3- Jericho

- **Street Lighting,** Al- Seil Station, Al-Maghtas(Baptism) Road, Jerusalem Road Amman Road ( The main East Entrance of Jericho City)
- **Public Building ,** Municipality Building, Library Building, The Spanish Park
- **Pump Stations ,** Domestic WP, Irrigation Pump, The South Elevated Reservoir





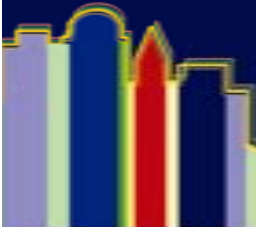
# Project Activities

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## 4- Anabta

- **Street lighting;** Tulkarem - Nablus Street Al-Sabe'e Street
- **Water Pumps;** Kofor Rumman WP station Beir. (1) Station Beir. (2) Station



# Project Activities

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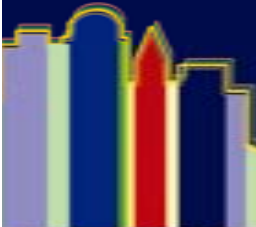
- Possible street-lighting in all Municipalities
  - 1350 street-lighting
  - 5 pumping stations systems
  - 600 public building lighting

Resulting in an annual saving of:

500,000 KWh in street lighting

18,000 KWh in Water and sewage pumping

40,000 KWh in public building lighting



# Project Implementation Plan

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## Measurement and Verification

- Deploying M&V plan during the energy audit stage.
- Using simple components of international protocol (International Performance M&V Protocol)

## Process Evaluation

- MDLF will appoint an international expert to carry out process evaluation, including site visits, interviews with stakeholders and a final recommendations to scale up.
- Organize stakeholder workshop involving Palestinian Energy Authority, private sector, municipalities and donors.

## Other activities

- Training to municipalities staff and MDLF

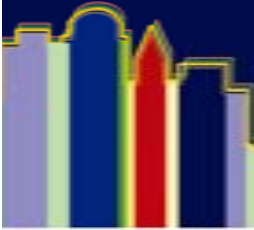


# Proposed Methodology

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- Data collection plan.
- Centralizing the regulations and auditing processes.
- Parallel way work.
- Measurable goals in applicable plans.
- Protecting the social interests.
- Consideration of environment needs.

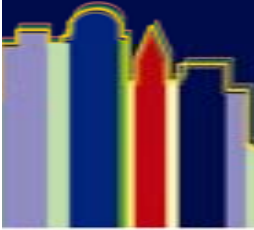


# Recommendations

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- Developing data base for implementing EE technologies in Palestine, which are applicable under local and national planning requirements and conditions.
- Integrating the implementation of EE applications of ongoing rehabilitation processes for projected consumptions.
- Promoting energy efficiency applications and awareness as a remarkable input in saving energy.

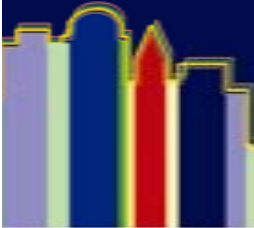


# Recommendations

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- Invest in promotion strategy, focusing on potential investors.
- Strengthen existing related firms like research centers.
- Promote global and regional cooperation and the exchange of information.
- Develop relative laws and bylaws.



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**Thank You**

