Mitigation Enabling Energy Transition in the MEDiterranean region

Industrial Sector in Jordan

Amel bida, KE Expert REEE II TA
Karam Al-Ajarmeh, Engineer, MEMR/ JREEEF
ALAA AL HADIDI /MEMR

10/12/2019
Content

• REEE II TA support in the industrial sector
• SMEs projects supported by JREEEF
• Jordanian case study
• MED test II in Jordan (Video on Switch-med’s support in the industrial sector in Jordan)
REEE II Program

The overall objective of the program is to contribute to the development and implementation of effective policies that would help Jordan reach its renewable energy and energy efficiency (REEE) targets for 2020.

Component C1: Policy and Strategy
Component C2: Implementation Assistance
Component 3: Communication and Capacity Building
Component 4: Management and Monitoring
Total final energy consumption by sector

- Transport: 50%
- Household: 22%
- Services: 6%
- Others: 8%
- Industry: 14%

2018

3rd consumer
Electricity consumption by sector

- Household: 46%
- Industry: 22%
- Services: 14%
- Others: 18%

2018
**Component C1: Policy and Strategy**

**NEEAP:** Political/Stakeholders support and continuity of efforts and coordination for the adoption, launching and implementation of 2017-2020 NEEAP

**In General**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Period</th>
<th>Electricity saving (GWh)</th>
<th>Program cost (MJD)</th>
<th>Bill saving for users (MJD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE program in industrial Sector</td>
<td>Energy Efficiency measures implementation 50 industries annually</td>
<td>2017 - 2020</td>
<td>383</td>
<td>105</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>383</td>
<td>105</td>
<td>53</td>
</tr>
</tbody>
</table>
Jordan Energy Efficiency Action Plan

Indicative target of the second NEEAP (2018-2020)

%Sector Saving Contribution

- Residential: 19.39%
- Industrial: 19.04%
- Commercial & services: 8.25%
- Water Pumping: 2.78%
- Street Lighting: 50.53%
Component C1: Policy and Strategy

Mission to ANME, STEG, STEG-RE and Minister of Energy in Tunisia:
Objective: Learning about the EE policy success, particularly in the industry sector

Signature!!!!! of two MoUs with ADEME and OME:
With ADEME: as stated in the MoU, a three years duration roadmap will be jointly established, providing the details for implementing actions of Energy efficiency in the buildings, the transport sector, the Industry... for the objective of exchanging knowledge and sharing experiences, data and information, strengthening capacity... on good practices, financial mechanisms, strategies design, modelling and tools, technology transfers, ESCOs....

Signature of MOU for PA-CEMP
Component 3: Communication and Capacity Building

Signature of MOU for Pan-Arab Certified Energy Management Professional (PA-CEMP) introduction to Jordan between MEMR, JREEEF and RCREEE: An MoU between JREEEF/MEMR, JEA and RCREEE, an agreement between JREEEF and JEA and an agreement between REEEII TA and JEA were signed.

it was agreed with the JEA Training Centre to provide monthly trainings and certification rounds.

Currently 11 rounds have been organized.
Component 3: Communication and Capacity Building

*Regulations for Energy Audits, ESCOs*  REEEII TA provided support to MEMR/JREEEF and JSMO for the adoption of the European Energy Audit standard EN 16247 standard

REEEII TA team continues to provide the needed technical support including the organization of a national training workshop to present the energy Audit Standards to local stakeholders including ESCOs/ energy auditors in the industrial sector with the support of an International non-key expert

Energy Audit training workshop for the introduction of the EU energy Audit Standards was coordinated with JREEEF/MEMR and JSMO. It took place from 14 to 18 July 2019
Jordan Renewable Energy and Energy Efficiency Fund

- It was established under the Renewable Energy and Energy Conservation Law No. (13) of 2012, and its amendments

- The fund management committee headed by the Minister of Energy and Mineral Resources consists of (7) members from the public and private sectors equally

- The Bylaw of the Renewable Energy and Energy Saving Fund No. (49) of 2015 was issued

- A comprehensive guide to the Fund's operations, instructions, procedures and terms for each of the Fund's programs has been developed.
### Program

| SMEs Industries | Energy Efficiency |

### Financial support window

- **Grant**
  - 70% of the loan collateral, in cooperation with the Loan Guarantee Corporation

### Incentives

- **Energy Audit**
  - 50% Grant for energy audit study and Feasibility studies for renewable energy with a maximum limit 10,000 JD.
  - interest subsidies, Provide selective credit and risk guarantees to banks for loans for implementation
  - Support the interest of a loan to implement the outputs of the energy audit study so that the loan does not exceed the value of 350,000 Jordanian dinars per plant

Technical assistance during all stages of program implementation
JREEEF financial mechanisms

- Full subsidy 100%
  - Grants

- Partial subsidy, 30%, 50%

- Zero interest loans.
  - 100% loan guarantee.
Industrial Sector

- Support program for medium and small enterprises to implement renewable energy and energy rationalization projects:
- The first stage: the participation of 18 factories and the financing of 8 factories.
- The second stage: agreements have been signed with (36) industrial establishments, and the start of receiving offers of energy audit studies distributed among several industrial sectors as shown in the figure below.
- Energy audit studies were conducted for 10 factories in the second phase

The number of participating factories distributed by sectors

- Plastic and rubber industries
- Food and catering industries
- Engineering industries and information technology
- Pharmaceutical industries, medical and therapeutic supplies
- Printing and packaging
- Chemical and cosmetic industries
- Textile and knitting industries
- Construction industries
Key Systems & Equipment Analyzed

The ultimate energy audit objective is to identify the potential of energy saving opportunities for the following systems:

1. Lighting System
2. Production Lines
3. Cooling Systems
# Case study: Energy Saving Measures in the food sector

<table>
<thead>
<tr>
<th>ID</th>
<th>Energy Saving Measure</th>
<th>Cost saving [JOD/yr]</th>
<th>Investment [JOD]</th>
<th>Payback Period [years]</th>
<th>Reduced energy consumption [kWh/yr]</th>
<th>Reduced CO2 emission [ton/yr]</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lighting Systems Retrofit</td>
<td>1,570</td>
<td>3,265</td>
<td>2.1</td>
<td>19,620 (4.2%)</td>
<td>-</td>
<td>11.0 Fully implemented</td>
</tr>
<tr>
<td>2</td>
<td>Improving the insulation of production lines</td>
<td>12030</td>
<td>2200</td>
<td>0.2</td>
<td>-</td>
<td>305,095 (25.2%)</td>
<td>70.2 Partially implemented</td>
</tr>
<tr>
<td>3</td>
<td>Water chiller upgrading</td>
<td>315</td>
<td>500</td>
<td>1.6</td>
<td>3930 (1%)</td>
<td>-</td>
<td>2.2 Not implemented</td>
</tr>
<tr>
<td>4</td>
<td>Upgrading the cold stores cooling units</td>
<td>1790</td>
<td>2000</td>
<td>1.1</td>
<td>22405 (4.8%)</td>
<td>-</td>
<td>12.5 Not implemented</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>15,705</strong></td>
<td><strong>7,965</strong></td>
<td><strong>0.5</strong></td>
<td><strong>45,955 (10.0%)</strong></td>
<td><strong>305,093 (25.2%)</strong></td>
<td><strong>95.9</strong></td>
</tr>
</tbody>
</table>
The TEST methodology from the United Nations Industrial Development Organization (UNIDO) is an integrated approach that enables businesses to identify innovative and cost effective ways to save energy, water and raw materials in their production. Combining tools from RECP practices, Environmental Management System (EMS) and Material Flow Cost Accounting (MFCA), this methodology has proven that RECP investments bring an attractive profit for the environment and the businesses. Implemented during 2015-2018 by the RSS, in partnership with Amman Chamber of Industry (ACI), the achieved MED TEST II project identified a potential annual savings of over 1.6 Million JOD that resulted in 22,181 MWh/yr in energy savings; 63,844 m3/yr of water savings; 404 tons of raw material savings, and 83 tons of landfilled solid waste avoided for the 12 participating companies.
Thank you for your attention