Energy Efficiency in the Construction Sector in the Mediterranean Countries «EU- MED-ENEC »

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Amman: 30-31 October 2017
Importance of Buildings

- Largest end-use sector
- 1/3 carbon emissions
- 50% of electricity
- Major portion of GDP

Opportunities/challenges:
- Population growth and increased wealth in emerging economies will drive new floor area => needs to be efficient

Energy saving potential in buildings

Final energy saving in MENA region in 2030 according to the IEA 450 scenario

Largest EE potential in Buildings

Energy efficiency potential, 2025, MENA region

Source: IEA, 2009
Buildings in Arab countries
Importance of building in total energy consumption

Final energy use in buildings, 2012

~28%

Buildings in Arab countries
Importance of building in total energy consumption

Final electricity use in buildings, 2012

~66%

Buildings in Arab countries
Importance of building in total energy consumption

Growing rate of urbanization
+ Rising standards of living
+ Aspirations for greater comfort

Substantial Increase in Energy Consumption
Including Peak Electrical demands

low prices of many household equipments (often with very poor energy performance ratings)
affordable to an increasingly high number of potential consumers

Important energy subsidies of consumer energy prices (in most countries of the region)
No incentive to end users to choose more EE solutions or equipments
MED-ENEC Project on Energy Efficiency in the Construction Sector is a regional project funded by the European Union and was implemented by a consortium of three companies ADEME and ECOFYS and lead by GIZ.
“To increase the use of Energy Efficiency (EE) measures and Renewable Energy (RE) technologies in the building sector and help develop the related industrial and service activities in our Mediterranean Partner Countries”.

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MED-ENEC Partner Countries

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MED-ENEC IMPLEMENTATION
2 PHASES

- MED-ENEC I: 2006-2009 - Technologies Transfer
  - MED-ENEC project supported 10 low-energy-buildings as pilot projects in all partner countries

- MED-ENEC II: 2010-2016 – Know How Transfer
  - Support ME partners to improve policies and framework conditions that enhance energy efficiency and the application of renewable energy technologies in the building sector
MED-ENEC PHASE I
TECHNOLOGY TRANSFER
2006-2009
10 pilot projects (PP) were established to:

- Demonstrate **best practices and new technologies** as well as integrative approaches for the efficient use of energy and the use of renewable energies in the building sector in the MEDA countries.

- Increase the **knowledge of new construction and technical building equipment technologies**, highlighting their interest, showing their practical feasibility, and promoting their adoption and development.

The PP represent a balanced regional mixture as well as different building types and technologies.
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### I) Small residential buildings

1) **Rural house**
   - **ALG - Souidania, Alger**
   - Bioclimatic design, earth stabilized bricks, night ventilation and fans, solar space heating & hot water

2) **Urban villa**
   - **JOR - Aqaba**
   - Design, orientation, shading, solar cooling, thermal insulation

3) **Urban villa/guest house**
   - **MORC - Rabat**
   - Bioclimatic design: orientation, thermal insulation, overhang shadowing, thermal mass, night ventilation, solar collector/heat pump system

### II) Large residential buildings

4) **Flat in apartment building**
   - **PAL - Ramallah**
   - Thermal insulation, double-glazed windows, ground coupled heat pump

5) **Low-income apartment building**
   - **SYR - Kudsira Suburbs**
   - Thermal insulation, traditional shading, solar chimney, evaporative cooling, solar floor heating & hot water
### III) Non-residential buildings

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Location</th>
<th>Description</th>
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<tbody>
<tr>
<td>6) Private training &amp; research centre (1,760 m)</td>
<td>TUR - Gebze</td>
<td>Thermal insulation, natural light, shading, ground heat pumps for cooling &amp; heating</td>
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<td>7) NGO training &amp; community centre (2,100 m)</td>
<td>ISR - Sakhnin</td>
<td>Traditional elements: passive cooling towers (Malkafs), natural light openings (Tisanes), shading systems (Mashra-bia). New technologies: CFL bulbs, photovoltaics (PV) and wind turbine</td>
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<td>8) Public administration office (refurbishment, 576 m)</td>
<td>EGY - Sharm El Sheikh</td>
<td>Solar cooling, reflective insulation coating for roof, shading, sealing the windows, occupancy sensors</td>
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<td>9) Private hospital (refurbishment, 6,000 m)</td>
<td>LEB - Zgharta</td>
<td>Roof insulation, efficient lighting, maintenance of air conditioning, demand-side management system</td>
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<td>10) Tourism complex (3 chalets, 148 m)</td>
<td>TUN - Beni M'Tir</td>
<td>Wooden construction, bioclimatic design, insulation, shading, thermal mass, night ventilation, geothermal heat, solar air collectors, PV</td>
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MED-ENEC PHASE II
KNOW-HOW TRANSFER
2010-2016
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MED-ENEC II
KNOW HOW TRANSFER

- Financing
- Business Development
- Policy Development
- Knowledge Management / Curriculum Development
- Specific Demand
- EE Building Projects - JOR, TUN,...
- EE Building Codes
- Awareness

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Energy Efficiency Policy Recommendations
In MENA Countries

Cross-sectoral

1. Establish energy efficiency data collection and indicators (including capacity)
2. Develop National Energy Efficiency Action Plans
3. Facilitate private investment in energy efficiency
4. Designate lead institutions for planning, implementing, and monitoring energy efficiency policies and programmes
5. Implement an energy pricing policy that is in line/coherent with EE ambitions

Buildings

1. Require and enforce building energy codes (including minimum energy performance standards)
2. Support energy-efficient building renovations
3. Encourage use of high-efficiency building components
Energy Efficiency Policy Recommendations in MENA Countries

Appliances and Equipment

1. Require MEPS and labels for appliances and equipment
2. Monitor, verify and enforce standards

Lighting

1. Phase out inefficient lighting products and systems
2. Put in place efficient lighting systems (including high-efficiency street lighting)
MED-ENEC II
Policy Level

- Contribution on the development of the Arab EE framework under the umbrella of LAS.
  - Arab EE guideline
  - NEEAP Design Methodology
  - NEEAP Monitoring Reporting & Evaluation
Arab EE Guideline was the changing point for EE planning in the Arab region.
Supporting ME-Partner Countries on designing and evaluating their NEEAPs.

- Lebanon
- Palestine
- Jordan

This project is funded by the European Union.
Overview on the different status of EE BC in the region

Develop the regional Road Map (Regulatory framework, institutional set-up, capacity building,....)

Following: Adopt to local conditions

Creating a platform of exchange of best practices among the countries
### Status EE Building Code Implementation in ME-PCs

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<th>ALG</th>
<th>EGY</th>
<th>JOR</th>
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- **Red**: Need to start
- **Yellow**: In progress
- **Green**: Achieved
EE Building Code Roadmap in the MENA Region

Evaluation
- Collect data
- Evaluate & report
- Involved Ministries

Targets
- Define targets
- Involve experts
- Communicate

Energy Finance Municipalities

Housing

EE Building Code

(EE) Building Code Institution
- Plan strategy
- Chose mechanism

Enforcement
- Develop legal framework
- Institutional set-up
- Verification by review commission

Implementation
- Plan Implementation
- Allocate Budget
- Supporting policy mix

Strategy


### Regulation and Certification of ESCOs (ME)

- Overview on the status of ESCOs in the region
- Different status of the countries
- Develop the regional Road Map (Regulatory framework, certifications, institutional set-up, capacity building,....)
- Following: Adopt to local conditions

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**Energy Efficiency Services market development road map**

- **Policy goals**
  - Improved policy, strategy and legislative conditions
  - Appropriate institutions
  - Appropriate market conditions
  - Appropriate financing mechanisms
  - Additional support for ESCos

- **Policy actions**
  - Create national accreditation body
  - Qualification of certification bodies
  - Certification guidelines and approved trainings
  - ESCo finance mechanisms, public sector lead clients

- **Results**
  - Market for end-users
  - Market for ESCos
  - Energy efficiency improvements
  - Economic, energy and environmental improvement

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**MED-ENEC II**

Promoting ESCO market in the MENA Region

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MEDENEC II
Promoting ESCO market in the MENA Region

- Supporting ME-PCs on developing and implementing action plan to promote ESCOs business model in the building sector
  - Tunisia ESCO-Pilot project "public sector"
    - EE potential and Market for ESCO in public sector
    - Existing barriers for ESCO access to public sector
    - Developing and proposing a suitable regulatory framework
    - Developing a national toolkit (bidding document, - Typical contract, M&V plan for ESCO)
    - Developing a training program and certification scheme for ESCO
  - Lebanon
    - Developing and conducting training WS on ESCOs (EPC, MRV, Financing, Business model of ESCOs)
  - Jordan
    - EE potential and market analysis for ESCOs in the public buildings in Jordan
MED-ENEC II
Capacity buildings activities

- Enhancing the capacities of ME-PCs on EE in Building Sector
  - EE policies design and implementation for policy makers (all partners)
  - Energy audits in existing buildings (hotels, office buildings,..) for
    - Energy Experts, Energy Managers by sector
    - Algeria, Egypt, Lebanon, Palestine....
Supporting ME-PCs on designing, implementing, and enforcing MEPS & Labelling Programs for Energy using equipment

- **Morocco - Designing Regulatory Framework for MEPS & Labelling**
  - Conducting an international and regional benchmarking related to MEPS
  - Assisting the national counterpart on the designing of the MEPS program
  - Proposing a comprehensive regulatory framework for the implementation of MEPS adapted to the Moroccan context
  - Conducting national consultations with key stakeholders to validate the new national MEPS framework
  - Developing a final suitable regulatory framework for MEPS
Contributing on launching a new initiative for a Regional Standard & Labelling

- The free trade in goods and services within the Arab countries needs better alignment and coordination of standards and testing procedures.

- The harmonization of EE S&L programs often brings additional benefits:
  - Reduces program costs by adopting existing program;
  - Avoids or removes indirect barriers to trade.
Developing EE Guidelines & Best Practices covering relevant challenges facing the Region to scale up EE in building sector.
Regional Cooperation
Stakeholders Partners of MED-ENEC

- LAS
- RCREEE
- EU projects CES-MED, SUDEP
- MEDENER
- ESCWA
- UNEP
- WB
- IEA
- EBRD
EE is a key driver for a sustainable energy transition in the region
Scaling up EE market….will require

- **A coherent and Clear EE** policy package and Government support to push and pull the market

- **Financial support** and **Innovative Mechanism** to address Market failures

- **Massive awareness** increase of actors at all levels & enhancing the capacities of all stakeholders

- **Public-Private Partnership** strategy and actions to promote EE (ESCOs, Energy utility….)

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*GIZ International Services, ECOFYS, ADENE*
Global and regional collaboration and knowledge exchange is essential to address the EE & RE in a more effective way.

- **Accelerate** the replication and exchange of successful energy efficiency strategies and policies.
- **Rapidly** adopt best practices and best available technologies.
- **Regional emulation** will achieve a real transformation of the market towards Energy performant technologies and EE behaviours.
THANK YOU FOR YOUR ATTENTION

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