ENECE HLM WS “Energy Efficiency for sustainable housing”

Energy Efficiency Building Code Implementation
In MED-ENEC Parteners Countries

Kawther LIHIDHEB
Key Expert.MED ENEC
Overview

- Building energy issues in MENA Region
- Energy saving potential in MENA Region
- MED-ENEC Objective and activities in MENA Region
- Barriers of Energy Efficiency Building Code Implementation in MENA Region
- EE Building Code Road Map in MENA Region
Building Energy issues
Share in world final energy consumption

Final energy consumption in the World in 2007

- Building: 2,794 (34%)
- Industry: 2,266 (27%)
- Transport: 2,297 (28%)
- Others: 917 (11%)

Final energy consumption in MENA region in 2007

- Building: 106 (29%)
- Industry: 90 (25%)
- Transport: 104 (29%)
- Others: 63 (17%)
Building Energy issues
Energy demand perspectives of the sector

Prospetive de l'évolution de la demande en énergie finale du secteur des bâtiments selon le scénario de référence de l'AIE

Source: AIE, 2009
Final energy consumption in the world in 2030 according to IEA reference scenario

- Building: 3,639 (32%)
- Industry: 3,302 (29%)
- Transport: 3,331 (29%)
- Others: 1,134 (10%)

Final energy consumption in the world in 2030 according to IEA reference scenario

- Building: 192 (27%)
- Industry: 177 (25%)
- Transport: 228 (32%)
- Others: 123 (17%)

Source: IEA, 2009
Energy saving potential in buildings

Energy savings structure according to IEA 450 scenario

Final energy saving in the world in 2030 according to 450 IEA scenario

- Building: 29%
- Industry: 38%
- Transport: 27%
- Others: 6%

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

- Building: 40%
- Industry: 15%
- Transport: 35%
- Others: 10%

Source: IEA, 2009
MED-ENEC-Project Goal

“To Develop the markets for EE and RE in the Building sector and related industrial and services activities within the Mediterranean Partner Countries”

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MED-ENEC ‘S Activities

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

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Growing Energy Consumption

Increase of cooling systems: AC, Split Units, etc,...
EE Building Code a MUST!!

Commitment: A Must!!  EE Building Code

Electricity Consumption Buildings (% of Total Electricity Consumption)

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption</th>
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<tbody>
<tr>
<td>ALG</td>
<td>58</td>
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<tr>
<td>EGY</td>
<td>40</td>
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<tr>
<td>JOR</td>
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<td>LEB</td>
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<td>MOR</td>
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<td>PAL</td>
<td>70</td>
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<td>TUN</td>
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<td>SYR</td>
<td>62</td>
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Forecasts new residential units 2010-2030
(in MED-ENEC Countries)

40 to 64 million >>
24 millions new units until 2030 in the region
Building Practice in ME-PCs

Designing & Building Problems!
Use the most cost effective & easy to implement EE measures:

- Building Energy Efficiency Codes: The policy instrument to address building Energy Consumption

Cost Efficiency

Behavior

Initial Cost for EE Improvement

Renewable Energy

Installation

Building Construction

Architectural Design

Building Morphology

Urban Planning
## Status EE Building Code Implementation in ME-PCs

### Overview of EEBC development in ME-PCs

<table>
<thead>
<tr>
<th>Technical Development of EE BCs (envelope)</th>
<th>ALG</th>
<th>EGY</th>
<th>JOR</th>
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<td>Technical Development of EE BCs (Active systems)</td>
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<td>Endorsement Legislation</td>
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<td>Institutional Set-up</td>
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<td>Enforcement</td>
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<td>Monitoring &amp; Evaluation</td>
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- **Red**: Need to start
- **Yellow**: In progress
- **Green**: Achieved

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The technical structure of the Arab EE BC covers the following issues:

1. General and Nomenclatures
2. Scope
3. Climatic zones for Arab countries
4. Compliance
5. Describes options for compliance
6. Mandatory Provisions Must be used
7. Requirements for:
   8. Building Envelope (thermal insulation, windows to wall ratio, solar shading)
   9. Heating, Ventilating, and Air-Conditioning
   10. Service Water Heating
   11. Power
   12. Lighting
   13. Other Equipment
14. Product Information and Installation Requirements
15. Information products
Lack of mandatory EE measures in building code.

Lack of enforcement of the legal framework. This goes together with lack of implementation instruments and the non enforceable institutional and legal framework.

Lack of institutional set up for implementation enforcement of EEBC and/or absence of a clear mandate and adequate means (budget and personnel).

Lack of technical expertise and knowledge of building science.
The benefits of EE buildings are not communicated clearly: There is a lack of information related to the potential financial and economic gains for the national economy, when an EEBC is implemented and enforced at the institutional level.

In some cases the technical standards are complicated, as they refer to different foreign standards, which are difficult to apply into the national context.

Lack of Incentive measures and adequate financial mechanism to support EE Building Code development and implementation.
How to deliver an Effective EE Building Code in ME-PCs

- **Enforcement** strategy policy and **effective implementation process** are crucial to ensure a sustainable Market Transformation.

- **Important to involve all stakeholders, particularly professional representation through each stage of program development.**

- **Support for demonstration projects** is needed to mature the market development of energy efficient buildings in the region.
Supportive Measures and New innovative financial mechanisms are needed to accelerate the adoption of EE measures in buildings and Foster the Market transformation and to ensure that efficiency can be cost effective.

Awareness and information Campaigns targeting all stakeholders about the benefits of EEBC are essential to widespread understanding and increase public acceptance.
MED-ENEC Support: Share Experience and Best Practices in the Region

Four regional WSs in coordination with LAS:

- Sept 2011 (Beirut) - Study
- April 2013 (Tunis) - Road Map
- Sept 2013 (Beirut) – Enforcement
- Sept 2014 (Cairo) - Enforcement
EE Building Code Roadmap in the MENA Region

Evaluation
- Involved Ministries
- Collect data
- Evaluate & report

Targets
- Define targets
- Involve experts
- Communicate

Energy
- Finance
- Municipalities

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

Enforcement
- Plan Implementation
- Allocate Budget
- Supporting policy mix

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

Strategy

This project is funded by the European Union

Energy Efficiency Building Code
A Roadmap for implementation in the MENA Region
September 2013