
14th Energy Conservation Workshop (ECAP 14)

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Ministry of Industry, Myanmar

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Contents

- Energy Consumption by Building Sector in Myanmar
- Energy Saving Potentials in Building Sector
- Energy Efficiency Policy
- Myanmar National Building Code (Draft, 2016)
- Criteria for BEC/ GBC
- Energy Efficiency Regulation for buildings
- Challenges
Energy Consumption by Building Sector in Myanmar

- Residential Sector
  - 63% for Electricity and Biomass

- Commercial Sector
  - 5% for Electricity and Diesel Generator Set

- Transport
  - 12%

- Non-Energy Agriculture
  - 3%

- Commercial
  - 5%

- Industry
  - 6%

- Residential-Urban
  - 9%

- Residential-Rural
  - 63% for Electricity and Biomass
## Energy Saving Potential in Building Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sub-Sector</th>
<th>Saving Potential (%)</th>
<th>EE Technologies Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>Office Buildings</td>
<td>25</td>
<td>HE Lighting, ACs, Office Equipment through MEPS</td>
</tr>
<tr>
<td></td>
<td>Restaurants</td>
<td>25</td>
<td>HE Lighting, ACs, LPG cooking, Solar water heating</td>
</tr>
<tr>
<td></td>
<td>Hotels</td>
<td>30</td>
<td>HE Lighting, ACs, LPG cooking, solar water heating</td>
</tr>
<tr>
<td></td>
<td>Commercial Sector: Average Saving Potential (%)</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>Urban Households</td>
<td>30</td>
<td>HE Lighting, refrigeration, MEPS for appliances, SHW, LPG cooking</td>
</tr>
<tr>
<td></td>
<td>Rural Households</td>
<td>30</td>
<td>HE Lighting, refrigeration, MEPS for appliances</td>
</tr>
<tr>
<td></td>
<td>Residential Sector: Average Saving Potential (%)</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Public Sector</td>
<td>Public Buildings</td>
<td>25</td>
<td>HE Lighting, ACs, Office Equipment through MEPS</td>
</tr>
<tr>
<td></td>
<td>Hospitals</td>
<td>30</td>
<td>HE Lighting, ACs, LPG cooking, SWH, cogeneration</td>
</tr>
<tr>
<td></td>
<td>Schools</td>
<td>25</td>
<td>HE Lighting, ACs, Office Equipment through MEPS, Boilers, SWH</td>
</tr>
<tr>
<td></td>
<td>Public Lighting</td>
<td>50</td>
<td>LED, HPS street lighting</td>
</tr>
<tr>
<td></td>
<td>Public Sector: Average Saving Potential (%)</td>
<td>25%</td>
<td></td>
</tr>
</tbody>
</table>
Scope of Energy Efficiency Policy (Strategy)

- Energy Intensive Industries
  - Industrial Guidelines
  - Energy Manager
- Energy Intensive Buildings (Commercial, Public)
  - Building Guidelines
  - Energy Manager
- Residential Sector
  - MEPS for Electrical Home Appliances
- EE Projects and Trainings
  - Demonstration Projects
  - Energy Management Training
  - Energy Efficient Technology Training
  - Awareness Training
Scope

The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

Seven Sections under the code are as follow:

1. Planning, Environment, Administration and Legislation
2. Architecture and Urban Design
3. Structural Design
4. Soil and Foundation
5. Building Services
6. Building Materials
7. Construction Practices and Safety
Part 2: Architecture and Urban Design

2.12 Architecture for Energy Efficiency and Green

<table>
<thead>
<tr>
<th>1. Energy</th>
<th>2. Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Energy efficiency (design and practice)</td>
<td>▪ Safeguarding water and water efficiency</td>
</tr>
<tr>
<td>▪ Low embodied energy (Life cycle of materials)</td>
<td>(design and practice)</td>
</tr>
<tr>
<td>▪ Provision of Natural lighting and ventilation</td>
<td>▪ Rain water harvesting</td>
</tr>
<tr>
<td>▪ Conservation of materials and resources</td>
<td>▪ Managing waste water</td>
</tr>
<tr>
<td>▪ Utilizing renewable energy (optional)</td>
<td>▪ Water recycling</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 Human Comfort and Health</th>
<th>4 Environmental Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Thermal comfort</td>
<td>▪ Low carbon emission</td>
</tr>
<tr>
<td>▪ Indoor air quality</td>
<td>▪ Maximize greenery</td>
</tr>
<tr>
<td>▪ Adequate Lighting</td>
<td>▪ Reduce pollution</td>
</tr>
<tr>
<td></td>
<td>▪ Reduce landfill waste</td>
</tr>
</tbody>
</table>
Scope of the regulation

The provisions of this code shall apply to

- All new Commercial building works (except Religious, low cost public apartment projects, non-profitable social release and assisted public based building projects provided by Government or NGOs) which involve a gross floor area of 100,000 sqft or more,
- Additions or extensions to existing commercial buildings, which involve increasing the gross floor area of the existing buildings by 100,000 sqft or more,
- Commercial building works which involve major retrofitting to existing buildings with gross floor area of 100,000 sqft or more;
- Building works located in an area which is identified as an environmentally sensitive area
- All building works which required EIA and SIA assessments
- Building works which the government officially states for compliance with this code
2.12.4.1 Energy Efficiency and Renewable Energy

Building Envelope
- Resistance to air, water, heat, light, and noise transfer
- To be designed in a way to enhance overall thermal performance of building envelope to minimize heat gain (for Hot regions) thus reducing the overall cooling load requirement

Roof
- Minimum heat penetration makes significant effect in reducing the temperature of the building (without skylight U value, with skylight RTTV (Roof Thermal Transfer Value)

Natural Ventilation in Common Area (Optional)
- Natural ventilation, also called passive ventilation
- Common area such as stairs, toilets, lifts, lobby, walkways, passage ways are advised

Lighting
- Day Light usage, Design Requirement, Type, Lux, etc.
- Energy Management and Control System (EMCS) (Optional)
- Computer-aided control, HVAC system

Renewable Energy (Optional)
<table>
<thead>
<tr>
<th>Sr.</th>
<th>Two Categories under Ministerial Decree</th>
<th>Objective Persons</th>
<th>Obligation</th>
<th>Restriction/ Thresholds level under Ministerial Decree</th>
</tr>
</thead>
</table>
| 1   | Design and Construction                | Building Owner    | Building Design  
Natural Condition Usage  
Heat Insulation (Wall, Roofing)  
Lighting & Air Conditioning System  
Construction Materials | Total Floor Area  
Eg. 10000 ft² and above |
| 2   | Energy Consumption                     | Specified Business Operators | Appoint Energy Manager Reporting System | Total Energy Consumption  
Eg. 3,000,000 kWh and above or GJ or Toe |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Focuses only on Architectures, Building Design for Energy</td>
<td>Building Design for Energy Saving and Natural Condition Usage</td>
</tr>
<tr>
<td>2</td>
<td>No regulation for Energy Consumption, energy management (Operational Control)</td>
<td>Regulation for Energy Consumption, energy management and Operational Control</td>
</tr>
<tr>
<td>3</td>
<td>Apply only Safety standards</td>
<td>Apply Energy Performance standard plus safety</td>
</tr>
<tr>
<td>4</td>
<td>No technical details for energy performance level and calculation for the appliances</td>
<td>Technical guideline and calculation detail for the appliances</td>
</tr>
<tr>
<td>5</td>
<td>Renewable Energy Usage is Optional.</td>
<td>Renewable or alternative energy or new energy instead of fossil fuel usage must be necessary for green building code</td>
</tr>
</tbody>
</table>
Issues/ Challenges to implement Energy Building Code/ Green Building Code in Myanmar

- Regulation or enforcement for energy management in buildings
- Lack of practices or awareness for energy efficiency and conservation
- Practical Trainings have to be provided
- Financial constraints to afford for green building construction to comply with the international standards
Your kind suggestions, comments and cooperation are welcome.

Thank you!