Implementation Approaches: Energy Conservation Building Code

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By: Mohini Singh
Senior Researcher, AEEC
ECBC Roles & Responsibilities

ADOPTION - Notification of ECBC in State
- State Officials

IMPLEMENTATION – Demonstrating compliance in buildings
- Technical Experts

ENFORCEMENT – Compliance check
- State Officials
  (Assistance through TPAs)

Code development and update, Amend ECBC to meet State requirements
- Technical Experts

Source: BEE, UNDP-GEF & CEPT
ECBC Implementation Process – Government Roles & Responsibilities

**CENTRAL GOVERNMENT**
- Ministry of Power
- Ministry of Urban Development

**STATE GOVERNMENT**
- UDD
- PWD
- DoE...

**LOCAL GOVERNMENT**
- UDD
- PWD
- DoE...

**ECBC Development and Update**
- Amend ECBC to meet State requirements
- Notification of ECBC in the State Gazette
- Revision of DCR/Building Bye-laws

**Enforcement of ECBC**
- ECBC Cell
  - facilitates ECBC implementation by bridging the communication, technical and Human Resources Gap

**Revision of ULB Byelaws and approval process**

Source: BEE & UNDP-GEF
Timeline of ECBC Implementation

2001
EC Act
*Building having connected load of 500 kW or contract demand of 600 kVA*

2007
ECBC Published

2010
EC Act Amendment
*Building having connected load of 100 kW or contract demand of 120 kVA*

2011
ECBC Notification
ODISHA

2012
ECBC Notification
RAJASTHAN

2013
ECBC Notification
UTTARAKHAND

2014
- ECBC Notification
ANDHRA PRADESH & TELANGANA
- ECBC Notification
KARNATAKA

2016
- ECBC Notification
HARYANA, PUNJAB, WEST BENGAL
- Civil SoR Published by Karnataka online ECBC approval system

Source: BEE & UNDP-GEF
ROLE OF GOVERNMENT: IMPLEMENTATION APPROACHES BY STATES
In Andhra Pradesh the notification was facilitated by Municipal Administration & Urban Development (MA&UD) Department

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT


MUNICIPAL ADMINISTRATION & URBAN DEVELOPMENT DEPARTMENT

G.O.Ms.No. 30

Dated: 28.01.2014
Read the following:

3. Minutes of the Meeting held in the Chambers of Chief Secretary to Government on 18.09.2012
5. Technical Committee report on adoption of ECBC

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Source: BEE & UNDP-GEF
ANDHRA PRADESH & TELANGANA: ECBC adoption timeline

2009-11
- Extensive Workshops on Energy Efficiency

2012-13
- Government Announced Code Process – Technical committee constituted
- Intensive Stakeholder Discussions

2013-14
- Government Announced Code will be Enacted Soon
- Notification through G.O.M.S.30

2014-15
- Statewide Capacity Building

2015 onwards
- Code Operational in Telangana & Andhra Pradesh

- Training completed – more than 750 government officials, real estate developers and architects in AP and Telangana

Source: ASCI, Hyderabad
ANDHRA PRADESH & TELANGANA: Illustrative ECBC governance map

Source: Khosla, 2016
HYDERABAD: ECBC approval process

1. Real Estate Developer (RED) submits design to Third Party Assessor (TPA). TPA issues ECBC Compliance Certificate.
2. RED applies for building construction approval through online system.
3. Building Committee approves.
4. Municipal Corporation may conduct random inspections during construction.
5. RED submits the data (materials used, certificates etc.) to TPA for physical inspection. TPA issues Building Construction ECBC compliance verification certificate after inspection.

Source: NRDC
KARNATAKA: ECBC Notification

Karnataka notification was done by Department of Energy, Karnataka

GOVERNMENT OF KARNATAKA
ENERGY SECRETARIAT
NOTIFICATION

NO. EN41VSC2013, Date: 05.09.2014

Government of Karnataka gazette notification dated: 27th November 2014 (Part - IVA)

In exercise of the powers conferred by section 18 of the Energy Conservation Act 2001 (52 of 2001)

Section 18

THE GAZETTE OF INDIA
MINISTRY OF LAW, JUSTICE AND COMPANY AFFAIRS
(Legislative Department)

New Delhi, the 1st October, 2001/ Ashvina 9, 1923 (Saka)
THE ENERGY CONSERVATION ACT, 2001

(No 52 OF 2001[29- September 2001])

Power of Central Government or State Government to issue directions

The Central Government or the State Government may, in the exercise of its powers an performance of its functions under this Act and for efficient use of energy and its conservation, issue such directions in writing as it deems fit for the purposes of this Act to any person, officer, authority or any designated consumer and such person, officer or authority or any designated consumer shall be bound to comply with such directions.

Explanation— For the avoidance of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct —

(a) regulation of norms for process and energy consumption standards in any industry or building or building complex; or
(b) Regulation of the energy consumption standards for equipment and appliances.

Source: BEE & UNDP_GEF
KARNATAKA: Illustrative ECBC governance map

Ministry of Power: Bureau of Energy Efficiency
Develops ECBC

Ministry of Urban Development
Responsible for the building guidelines and approval processes

Energy Department
Provides technical support for ECBC implementation

Public Works Department

Urban Development Department
Develops state development control regulations

Electrical Inspectorate Department
KREDL (SDA)
Administers ECBC

Architecture Division (KT ECBC Cell)

Engineering Division

City Corporation

Urban local Bodies (Municipality)
Updates municipal building byelaws to be complaint with ECBC

Town Development Offices
Town planning offices include provisions into local bye laws

Source: Khasla (forthcoming, work in progress)
KARNATAKA: Organizational Structure of ECBC Cell

- Bureau of Energy Efficiency (BEE)
- Karnataka Renewable Energy Development Limited (KREDL)
- All India Institute of Local Self Government

ECBC CELL:
- 2 Architects and 2 Engineers

Technical Backstopping from AIILSG Delhi Office

Based in the office of Principal Chief Architect, Karnataka PWD

Source: BEE & UNDP_GEF
**KARNATAKA: Responsibilities of State Departments and ULBs**

**Urban Local Bodies** will be responsible for enforcement of ECBC in respect to private buildings.

Public Works Department (PWD) **Architectural Department Of PWD** will be responsible in respect to state government buildings.

**Department Of Electrical Inspectorate**, Government of Karnataka is to inspect electrical installation in the buildings, which are ECBC compliant.

**Karnataka Renewable Energy Development Limited**, as the nodal agency to monitor the implementation of the Code at the State level and also to create the awareness of the ECBC.

Source: BEE & UNDP_GEF
KARNATAKA: ECBC Cell Activities

**REVISING SCHEDULE OF RATES FOR KARNATAKA**

- To include energy efficient materials and products in SoR

**ENERGY EFFICIENT BUILDING DESIGN**

- Use Integrated Design Process to make 10 of the PWD’s buildings ECBC compliant

**UPDATING BUILDING BYE LAWS**

- To include ECBC provisions in the State GDCR and Bye Laws

**ORGANIZING ECBC AWARENESS WORKSHOPS**

- Capacity building of building sector stakeholders and government officials to make them aware about the ECBC provisions and compliance mechanisms

Source: UNDP-GEF
KARNATAKA: Revision of PWD SoR

SoR is a reference document followed by PWD and some Public Sector Undertakings (PSUs) for providing material and technology specifications and for cost estimation of buildings.

Source: UNDP-GEF
Scope of the ECBC Notification

**ANDHRA PRADESH**: The code shall be applicable to commercial buildings and other Non Residential Buildings that have a plot area of more than 1000 Square Meters or built up area of 2000 Square Meters and certain categories of buildings such as Multiplexes, Hospitals, Hotels, and Convention Centers irrespective of their built up area shall comply with the APECB Code as given in Annexure XIII.

**KARNATAKA**: The code is applicable to all buildings or building complexes in the urban area that have a connected load of 100 kW or greater or a contract demand of 120 kVA or greater, or having conditioned area of 500 m2 or more and used for commercial purposes.

**HARYANA**: The provisions of Energy Conservation Building Code shall be applicable to all buildings of categories listed below having connected load of 100 KW or above or a contract demand of 120 KVA or above,-

3. Cinema Halls, Auditoriums, Clubs, Convention Centers, Concert Halls.

Source: UNDP-GEF
KOLKATA: ECBC Notification

The Kolkata Gazette

Extraordinary
Published by Authority

CHAITRA 2 ] TUESDAY, MARCH 22, 2016 [ SAKA 1938

PART I.—Orders and Notifications by the Governor of West Bengal, the High Court, Government Treasury, etc.

GOVERNMENT OF WEST BENGAL
DEPARTMENT OF POWER & NON-CONVENTIONAL ENERGY SOURCES

NOTIFICATION

No. 42-PO/O/C-1/5M-49/09(Part I).—3rd March, 2016—In exercise of the powers conferred by Section 15 of the Energy Conservation Act, 2001(Central Act No. 52 of 2001), the Governor is pleased hereby to notify the following Energy Conservation Building (ECB) Codes for efficient use of energy and its conservation in buildings or building complexes, namely:—

1. (1) This Code may be called as West Bengal Energy Conservation Building Code, 2016
   (2) It shall come into force on the date of its publication in the Official Gazette.
   (3) The purpose of this code is to provide minimum requirements for the energy-efficient design and construction of buildings.
   (4) Definitions of all terms, abbreviations and acronyms used in this code are detailed in Appendix-A[§ 10].

2. Scope
   The code is applicable to buildings or building complexes that have a connected load of 100kW or greater or a contract demand of 120kVA or greater.
   This code stands mandatory from this date of notification.

Source: BEE & UNDP-GEF
NOTIFICATION

In exercise of the powers conferred by section 18 of the Energy Conservation Act, 2001 (Central Act No. 52 of 2001), the State Government hereby issues the following Energy Conservation Building (ECB) directives for efficient use of energy and its conservation in buildings or building complexes, namely:-

1. Scope:
The directives are applicable to commercial buildings or building complexes that have a connected load of 100 kW or greater or a contract demand of 120 kVA or greater or having conditioned area of 1000 m² or more.

1.1 Applicable Building Systems:
The provisions of these directives shall apply to, -

(a) Building envelopes, except for unconditioned storage spaces or warehouses;
(b) Mechanical systems and equipment, including heating, ventilating, and air conditioning;
(c) Service hot water heating;
(d) Interior and exterior lighting; and
(e) Electrical power and motors.
[Extract from the Punjab Govt. Gaz., dated the 1st July, 2016]

GOVERNMENT OF PUNJAB

DEPARTMENT OF NEW & RENEWABLE ENERGY

(Approved vide Cabinet order No. 2167 dated 25.05.2016)

NOTIFICATION

The 24th June, 2016

No. 18/4/16-61/1856.– In exercise of the powers conferred under Section 18 of The Energy Conservation Act-2001 (Act No. 52 of 2001), the Governor of Punjab is pleased to issue the following directions for the mandatory use of "Punjab Energy Conservation Building Code" for the energy efficiency and its conservation in the buildings or building complexes in the State of Punjab.

1. Purpose

The purpose of this code is to provide minimum requirements for the energy-efficient design and construction of buildings in the state of Punjab.

1.1. This code shall be called Punjab Energy Conservation Building Code (Punjab-ECBC).

2. Scope

The Punjab Energy Conservation Building Code (Punjab-ECBC) gives directives for the requirements for design or retrofit of buildings/ building complexes.

The code is applicable to buildings or building complexes that have connected load of 100 kW or greater or a contract demand of 120 kVA or greater or having conditioned area of 500 m² or more.

Punjab-ECBC pertains to all buildings / building complexes such as offices, hotels, shopping complexes, group housing complexes, hospitals and others that are not primarily for industrial i.e. manufacturing use.
EXTRAORDINARY
PUBLISHED BY AUTHORITY

No. 1625 CUTTACK, THURSDAY, JULY 14, 2011/ASADHA 23, 1933

DEPARTMENT OF ENERGY

NOTIFICATION

The 11th July 2011

No. 5423—R&R-III-66/2011—In exercise of the powers conferred by Section 15 of the Energy Conservation Act, 2001 (52 of 2001) the State Government in consultation with the Bureau of Energy Efficiency do hereby make the following code with respect to use of energy in the buildings, namely:—

1. (1) This code may be called the Orissa Energy Conservation Building Code, 2011.
   (2) It shall come into force on the date of its publication in the Orissa Gazette.

2. Definitions:
   (1) In this code unless the context otherwise requires,—
   “Appendix” means the Appendix “A” to “L” annexed to this code which have detailed reference of this code.
   (2) All other words and expressions used in this code but not defined shall have the same meaning as respectively assigned to them in the Energy Conservation Act, 2001.
HARYANA GOVERNMENT
RENEWABLE ENERGY DEPARTMENT

Directions
The 31st March, 2016

No. 19/6/2016-5P.— In exercise of the powers conferred by Section 18 of the Energy Conservation Act, 2001 (Central Act 52 of 2001), the Governor of Haryana hereby issue the following directions for enforcement of the Energy Conservation Building Code, namely:—

1. **Definitions.**— In these directions, unless the context otherwise requires,—
   
   (a) “kVA” means kilovolt-Amperes;
   
   (b) “kW” means kilowatt;
   
   (c) “Prescribed authority” means the concerned department i.e. local body or organization or authority, empowered by relevant law to sanction building plans; to inspect the building; and/or to issue the completion/occupation certificate to the project developers or their authorized agents.
   
   (d) “Project developer” means the owner of the building complex.

2. Words and expressions used and not defined above but defined in the Energy Conservation Act, 2001 (Central Act 52 of 2001) and Energy Conservation Building Code, shall have meanings respectively assigned to them in that Act/Code.

3. The provisions of Energy Conservation Building Code shall be applicable to all buildings of categories listed below having connected load of 100 KW or above or a contract demand of 120 KVA or above,—
   
   (i) Commercial Complexes, Shopping Malls, Trade Buildings.
   
   (ii) Hotels, Motels, Restaurants, Transit-cum-Boarding Houses, Banquet Halls, Janj Ghars, Resorts.
   
   (iii) Cinema Halls, Auditoriums, Clubs, Convention Centers, Concert Halls.
   
   (iv) Office Buildings, Banks, Public Assistance Institutions.
   
ROLE OF THIRD PARTY ASSESSORS
Need for TPA

Government and public sector agencies such as **ULBs, SDAs or the utilities do not have the manpower or the technical competency** to serve as the primary agency conducting ECBC compliance checks.

**TPA Approach:** TPA reviews each building project in two stages to determine ECBC compliance. The first stage is a Design Review and the second stage is Construction Review.

- **Design Review:** the TPA reviews the drawings, specifications, and ECBC Compliance Forms to ensure that the energy conservation measures (ECMs) are appropriately reflected in the project Design Documents.
- **Construction Stage:** the TPA reviews the ECBC Compliance Forms and inspects the building to ensure that the ECMs are reflected in the construction of the building and the installation of its systems.

Source: CEPT
Building Construction Process – Role of TPA

Construction and Permitting Process
For majority developer projects

ULB Approval → Occupancy Certificate

Design → Construction → Owners / Tenant / Interiors

*TPA insures energy conservation measures are PROPOSED*

ECBC norms

*TPA insures energy conservation measures are INCORPORATED*

Source: CEPT
Operating Model for Third Party Assessment for ECBC Compliance Checks

Source: CEPT
THANK YOU

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