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ADOPTION, COMPLIANCE, ENFORCEMENT  
for ENERGY EFFICIENCY in BUILDINGS

# Newsletter

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## ECBC India

ECBC 2017 (Energy Conservation Building Code) was launched by Hon'ble Minister (IC) for Coal, Mines, NRE and Power on 19th June, 2017 at Delhi and is applicable for large commercial buildings with connected load of 100 kW and above or 120 kVA and above. ECBC focuses on building envelope, mechanical systems and equipment including heating, ventilating, and air conditioning (HVAC) system, interior and exterior lighting systems, electrical system and renewable energy, and also takes into account the five climates zones (Hot Dry, Warm Humid, Temperate, Composite and Cold) present in India.

The ECBC was developed by an Expert Committee, set up by India's Bureau of Energy Efficiency, with support and guidance from United

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**EU-INDIA**  
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## Position Paper 8 - EPBD and Building Energy Codes - Compliance, Quality Assurance & Enforcement Strategies

The focus of this paper has been on **compliance and enforcement practices in EU Member States** in relation to the energy performance (EP) requirements arising from the EPBD in relation to new buildings and major renovations and on the associated requirements in relation to energy performance certification (EPC) or labels being mandatory at the point of offer for sale or rental. It outlines good practice processes applied among the leading EU Member States and provides information in relation to compliance levels with new buildings, major renovations and with retrofitting of energy efficiency measures.

As prescribed in their transposing national legislation enacting the EPBD and as applied in practice, Member State systems for ensuring practical operational implementation of the building energy code on the ground have involved enforcement by local/ municipal enforcement authorities including receipt, assessment and recording of evidence of compliance by building owners/ developers, through documentation and declaration by registered professional certifiers.

A key ingredient in good practice compliance systems is the setting of clear lines of professional accountability through each step of the building process.

In this regard, the extensive range of preparatory 'upstream' capacity building measures, are a vital precondition to establishing a credible compliance, quality assurance and enforcement regime.

An important need is for Government to authorise the financial and human resourcing of the assigned authorities to enable the development and operation of the necessary administrative and enforcement processes and associated IT systems (capacity building), and to enable ongoing promotion and systems development.

A fundamental resource in enabling credible and effective compliance, quality assurance and enforcement practices has been the **establishment of databases of EP certification records**. Good practice systems with powerful functionalities

## Elements

- **Background Legal & Technical context**
  - EU Member States
  - Common features with EU building energy codes
  - Differences between EU Member States approaches
- **Planning arrangements**
  - Positioning of compliance & enforcement processes
  - Compliance framework and enforcement authority
  - Decisions on assigning obligations, functions, powers, resources
- **Responsibilities for compliance & enforcement**
- **Systems Development & Capacity Building**
  - Overview of primary capacity building actions
  - Range of developmental actions
  - Capacity building for enforcers

including facility for analysis and informing of inspection and quality assurance strategies have been established in many EU countries.

While the investment cost of specifying, procuring and delivering such a system is substantial, Member States that made this investment to help carry out the administrative burden of managing millions of documents have been able to achieve a robust system with a relatively small administrative staffing backup requirement. It has also brought substantial co-benefits in terms of systematic insights into the building stock to inform ongoing and future planning.

**Unlike the case of India's ECBC system, there is no fully consistent and comparable central EU database.** The nearest example to such a pan European resource is the **BPIE EU Building Stock Observatory**.

Effective and cost-efficient quality assurance strategies involve a combination of preventative measures upstream and in the course of building design and certification and of sampled auditing applied as part of a post works monitoring regime, using a combination of a risk based prioritisation and random audits to keep the industry alert to compliance.

Independent analysis indicates average rates of compliance of 85% with Member State EP requirements. The most common form of penalty applied in practice has involved denial of an occupancy permit for the building pending correction of non-compliance items.

There is an acknowledged limitation to current building energy codes which are based on calculated performance at the design stage (which is rational and necessary, and is an objective 'asset rating'), whereas measured energy performance ('operational rating') in practice may deviate considerably from the design prediction.

**India's framework for enabling compliance and enforcement in relation to the ECBC has the potential to be at least as effective as has been the case with the EPBD in several EU countries**, for two strategic reasons: firstly because of its development of relatively uniform systems and procedures for implementation across all States, including: (a) the common EP calculation methodology; (b) similar EP compliance criteria (allowing for inter-regional climatic variations); (c) a consistent legal framework and administrative infrastructure across its States; (d) a consistent/ centralised database for lodgment, review and retention of evidential EP code compliance records; and (e) hence a facility for training and other capacity building initiatives to be organised centrally to a common template and delivered consistently across all States. Secondly, the fact that energy in ECBC buildings is 100% supplied from electricity and the fact that the policy authorities have secured the co-operation of the electricity utilities and regulators regarding access to real performance data will enable ongoing monitoring and reporting of progress and inform their energy management and improvement practices.

- ***Features of compliance & enforcement in EU***
  - Compliance & enforcement process flow
  - Features of operational EU enforcement systems
- ***Codes of Practice***
- ***Importance of data management systems***
  - Value and features of central databases
  - EU Member State databases and registers
- ***Quality Assurance Strategy & Process***
  - Quality assurance strategy
  - 'Upstream' QA actions
  - 'In line' QA actions – inspection and checking
  - 'Downstream' monitoring & verifying of compliance
  - Complaints, disciplinary and appeals procedures
  - Potential role of energy utilities
- ***Levels of compliance***
  - Factors influencing compliance rates

## CONCLUSIONS

Success factors in implementation of compliance and enforcement practices in EU Member States can be summarised as follows:

- Adopt a legal framework which defines clear responsibilities, functions and powers
- Design and build an independent control system, including smart databases
- Apply an effective system of compliance checking at appropriate points for declaring performance/ inspecting/ checking compliance
- Monitor the compliance rate and take appropriate corrective educational action
- Sanctions need to be effective, proportionate and adapted to local context
- Establishing and operating an effective system needs policy commitment and investment of money and people in the necessary tools, people and systems.

While the quality of implementation varied across Member States, ultimately the majority succeeded in putting the necessary human capacity, organisational, enforcement and communication systems in place to ensure the preparedness of the construction and property sectors to achieve compliance with the new energy performance requirements, and for the authorities to oversee, monitor, enforce and report on compliance. This is also relevant to ensuring readiness to meet the EPBD requirement for NZEB by year 2020. **It is anticipated that elements of the compliance and enforcement frameworks applied in EU Member States could also be beneficially applied in the circumstances of India. Indeed, particular elements of EPBD implementation in the EU show good resonance with elements of the ECBC implementation process to date in India.**

- Compliance levels
- **Penalty framework**
- **Market visibility of EPCs**

### Project Partners:



EXERGIA Energy &  
Environment  
Consultants



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Private Limited India



Center for  
Environmental Planning  
and Technology  
University (CEPT)

### Main Beneficiary:



Bureau of Energy  
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Ministry of Energy

(Cont'd from page 1) States Agency for International Development (USAID) and significant inputs from various other stakeholders such as practicing architects, consultants, educational institutions and other government organizations. The successful implementation of the code requires development of compliance procedures (compliance forms and development of field-test compliance forms and procedures), in addition to building capacity of architects/designers/builders/contractors and government official in States and Urban and Local Bodies (ULBs). It is also dependent on availability of materials and equipment that meet or exceed performance specifications specified in ECBC. The ECBC provides design norms for:

- **Building envelope, including thermal performance requirements for walls, roofs, and windows;**
- **Lighting system, including daylighting, and lamps and luminaire performance requirements;**
- **HVAC system, including energy performance of chillers and air distribution systems;**
- **Electrical system; and**
- **Water heating and pumping systems, including requirements for solar hot-water systems.**