



ADOPTION, COMPLIANCE, ENFORCEMENT
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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 5 - EPBD and Building Energy Codes - The role of capacity building (training, tools & resources)

A key determinant of success with implementing building energy codes is the development and embedding of sufficient capacity both throughout the building industry supply chain (from planning/ design professionals to final commissioning and operation) and among the regulatory authorities. Capacity building is the 'bridge' between the formal technical performance requirements and targets set in the code and the practical delivery of those requirements and targets on the ground. It entails not only training and upskilling initiatives but calls for several other actions to assist in establishing the awareness, competence and confidence to deliver the necessary quality in the construction marketplace.

This position paper outlines the various capacity building actions taken by EU Member States in order to achieve compliance with the energy performance requirements arising from the Energy Performance of Buildings Directive (EPBD) (both the original and recast directive). The focus is specifically on practices and experiences pertaining to meeting minimum energy performance requirements and to some extent the associated energy performance certification or labelling) in non-domestic buildings, since these are most relevant to the process of implementing the building energy code (ECBC) in India.

While the quality of planning and coordination varied across Member States, and delays were experienced in some cases, ultimately the majority succeeded in putting the necessary human capacity, organisational and communication systems in place to ensure the awareness and preparedness of the construction and property sectors to achieve compliance with the new energy performance requirements. This is also relevant to ensuring readiness to meet the EPBD requirement for 'nearly zero energy buildings' (NZEB) by year 2020. **It is to be expected that elements of the capacity building frameworks applied in EU Member States could also be beneficially applied in the circumstances of India.**

The paper outlines the contextual positioning, status, functional role and features of the various capacity building

Elements

- *Rules and tools: methodologies and software*
 - Role of EN standards
 - Energy performance calculation methods
 - Setting of energy performance targets
 - Energy performance calculation software
 - Technical guidance documents
 - Other detailed technical support resources
- *People: upskilling actions*
 - Planning the training process
 - Questions for decision
 - Responsibilities
 - Early decisions
 - Training pathway
 - Training specifications
 - Training and accreditation of trainers
 - Delivering the training to prospective building energy code practitioners

actions, which include: (a) the development of technical tools to improve the efficiency and quality of the analysis and design processes, (b) the development and delivery of training for both building energy professionals and site tradespersons, (c) similarly with training for local building control/ regulatory professionals, (d) the development of efficient administrative/ organisational systems and processes, underpinned with good quality ICT systems, (e) the availability of building products and services to deliver code compliant buildings, and (f) the support for demonstration building projects which help to highlight the achievability of energy efficient buildings and thus provide evidence and confidence to the stakeholders. Allied to the latter, research and development projects aimed at tackling knowledge, skills gaps and developing new and improved building materials, equipment, design tools etc. can be seen as part of an ongoing capacity building process (these topics of RD&D and of industry capacity and role are addressed in next Position Papers).

In essence, it can be said that capacity building involves the engagement, skilling and mobilisation of the full orchestra of stakeholders responsible for ensuring that code compliant buildings are realised.

CONCLUSIONS

Three key groups of capacity building features are required to achieve compliance with a new building energy code such as mandated by the EU EPBD or India's ECBC. These are:

- **Tools:** Technical tools with sufficient functionality, user friendliness, accuracy, consistency and completeness to enable qualified building industry practitioners to deliver on their obligations in a cost-efficient manner;
- **People:** Training and upskilling of sufficient numbers of building industry practitioners to sufficient levels of competence to fulfil their role in delivering code compliant buildings (this issue is elaborated further below in relation to the needs of volume, quality and quality assurance), underpinned by robust quality assurance systems;
- **Systems:** Efficient (time and cost) administrative systems to enable submission of certification documents and evidence of code compliance and with the facility for utilisation by enforcement authorities to inform quality assurance strategies.

This paper has addressed the following range of capacity building actions:

- Provision of **technical tools** such as guidance documents, software, databases and other resources to assist the analysis, design and specification of buildings.
Arrangements for **training and upskilling of the professionals** and site trades responsible for delivering code compliant energy efficient buildings (including training of trainers). Implementation of the new building energy code for non-domestic buildings was primarily an augmentation to the established services of architects and building services engineers.
- Likewise, arrangements for **training of the relevant enforcement authority personnel**.
- **Decisions on training pathways** to ensuring adequate numbers of competent persons. Generally, training has been through existing accreditation oversight systems, involving some combination of public bodies, academic institutions, architectural or engineering professional bodies, and sometimes commercial trainers.

- Examinations
- Code of Practice/ Conduct
- Registers/ databases of certified competent/ qualified persons
- Assignment of enforcers
- Training of assigned enforcers
- Verifiers
- Training of construction site tradespersons

• **Systems development**

- Overview of process flow from tools to people to systems
- Establishment of administrative and data systems
- Quality Assurance
- Overall enforcement system

• **Other capacity building initiatives**

- Research, Development & Demonstration (RD&D) projects
- Dissemination and promotion

- **Preparation of a Code of Practice** covering professional competence and conduct as a precondition or accompanying condition to registration of competent persons. This may be supplemented by codification of complaints, disciplinary and appeals procedures.
- Associated **development of databases** for publicly registering competent persons, for efficient quality assurance and administrative/ organisational systems and processes for verifying and recording compliance, underpinned with good quality ICT systems.

The commissioning of **technical and strategic studies** to inform decisions on the energy performance calculation methodology, supporting software and other tools, and choices in relation to the administrative and quality assurance systems.

- The **availability of building products and services to deliver code compliant buildings** and the roles of commissioned studies and R&D projects in supporting product innovation and in informing detailed aspects of EPBD implementation.
- **Support for demonstration projects** which help to highlight the achievability of energy efficient

buildings and thus provide evidence and confidence to the stakeholders.

Under EU law, each EU Member State may decide its own operational approach to implementing the EPBD, and this has led to a range of different technical methodologies, training and recognition systems. This has led to significant differences of detail in the approaches in various Member States in relation to registration and accreditation of assessors, training and professional development, examinations, audit inspection and quality assurance systems, and in the detail of their building control and certification administration systems. However, even with market-based models of training, the authorities normally still exercise a degree of control through setting rules and qualification criteria for those seeking recognition as registered professionals. This can extend to a government nominated agency commissioning or preparing generic training material, which could have the effect of improving quality and consistency of training while simultaneously decreasing the costs of training. However, it is more common for a government agency to issue a training specification rather than actually prepare a detailed curriculum.

Ultimately, this range of capacity building actions is aimed at achieving a consistent strengthening of the 'quality chain' of construction industry professionals and installation trades responsible for delivering code compliant buildings.

Project Partners:



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(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.**