Building Energy Efficiency

Partnership to Advance Clean Energy-Deployment (PACE-D) Technical Assistance Program

May 2016

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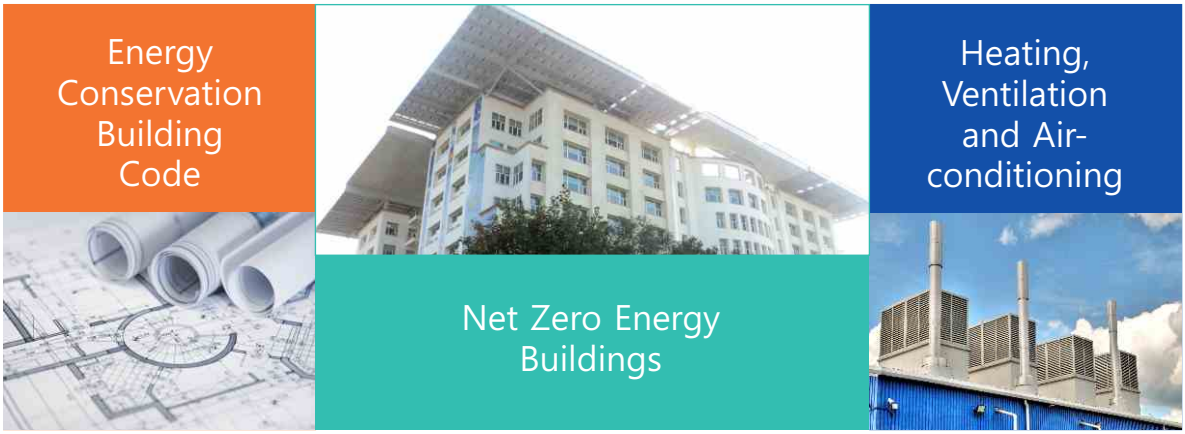
Overview

India is at a unique crossroad where two-thirds of the commercial and high-rise residential structures that will exist in 2030 are yet to be built. By 2050, India is expected to have an unprecedented floor area escalation of almost 400 percent. This growth, combined with improving levels of comfort, is expected to have a very dramatic impact on energy consumption.

Energy consumption, due to building envelope characteristics, influences the overall energy consumption of a building. The use of energy efficiency and renewable energy technologies in the building sector can not only reduce greenhouse gas emissions and support energy savings at the national level, but also reduce the energy cost of the occupants.

The Partnership to Advance Clean Energy – Deployment (PACE-D) Technical Assistance (TA) Program is supporting the Ministry of Power and the Bureau of Energy Efficiency (BEE) to accelerate deployment of clean energy technologies in the building sector. These activities are centered on the update of the Energy Conservation Building Code (ECBC) with a strategic vision of leapfrogging the vibrant Indian green building sector towards net zero energy status. The Program is also focused on the promotion of Net Zero Energy Buildings (NZEBs) and low-energy Heating, Ventilation and Air-conditioning (HVAC) systems by creating awareness and supporting the implementation of pilot projects in different climatic zones of India.



ECBC

Technical Update

The Government of India launched the ECBC in 2007 to set the minimum energy performance for commercial buildings in India. Under the 12th plan, one of the priority areas for BEE is to update the existing ECBC in response to technological advancement, market changes, and energy demand and supply scenario in the country. The PACE-D TA Program is providing support to BEE on this initiative and has completed key milestones.

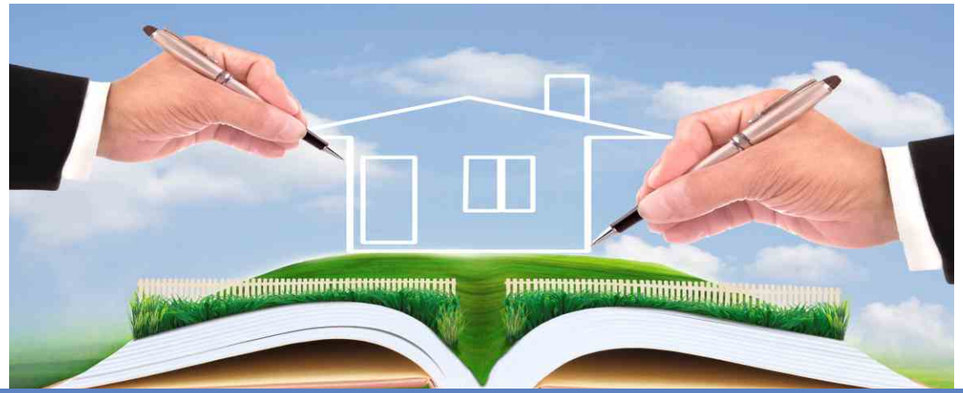
In order to take up the code revision, two Committees have been constituted involving various stakeholders namely – Steering Committee chaired by Director General, BEE and Technical Committee chaired by the Energy Economist, BEE. Five Working Groups have also been constituted to periodically review the progress of code update and recommend improvements and corrections.

The code update process has been designed to be transparent and participatory. The PACE-D TA Program organized regional stakeholder consultation workshops in Mumbai, Bengaluru and Kolkata to interact with stakeholders in West, South and East of India and get feedback from them on the scope of the revised code. The feedback from the stakeholders in North of India will be taken at the national workshop in New Delhi. All recommendations will be collated by the Program in the interim ECBC Stringency Analysis Report which will be reviewed by BEE and Working Groups.

Implementation

While the ECBC was launched on a voluntary basis by BEE in 2007, its enforcement lies with the state governments and urban local bodies.

The PACE-D TA Program is assisting BEE in ECBC implementation in two focal states (Haryana and Rajasthan) by supporting the development of rules and regulations for ECBC compliance and building the capacity of the stakeholders. Towards this objective, the Program developed ECBC Implementation Action Plan for the states, conducted high-level stakeholder meetings in Haryana and Rajasthan and facilitated formation of state level special task force for ECBC Implementation for Rajasthan. Haryana has already made ECBC mandatory as of March 2016.



Professional Certification Program

India has a large pool of architects and engineers who are currently designing energy efficient buildings, however few of them are familiar with ECBC requirements in its entirety. BEE proposes to address this challenge by establishing a professional certification program to build a competent cadre of professionals who can design, construct and certify ECBC compliant buildings.

The PACE-D TA Program is supporting BEE on this initiative and has developed the "ECBC Certification Program Examination Reference Guide" which constitutes the study material for prospective applicants who plan to take part in the certification process. The Program has also developed sample question papers for the examination. BEE will roll out the first examination in 2016.

The Program's integrated activities on building energy efficiency will guide the dynamic Indian green building sector towards net zero energy status, and promote low-carbon growth.

NZEB

NZEBs can reduce site energy through energy efficiency and renewable energy technologies. The PACE-D TA Program is focused on demonstrating the technical feasibility of the NZEB concept and promoting awareness about NZEBs in India. This is being done by two key interventions: pilot projects and a knowledge portal.

Pilot Projects

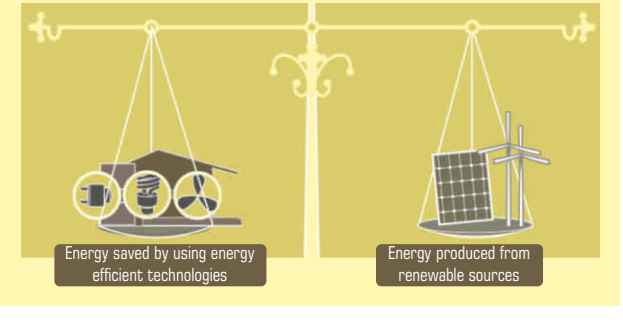
The PACE-D TA Program is providing technical assistance to two NZEB pilot projects - Nalanda University Campus, Rajgir and Uttar Haryana Bijli Vitran Nigam (UHBVN) Headquarters, Panchkula. The variation in scale, location and scope of these pilots will demonstrate the feasibility of NZEBs across a multitude of building types and climate zones in India. The pilot projects will also provide an opportunity to engage stakeholders across the building value chain and disseminate information on NZEB tools, technologies, performance, measurement and verification of data over a period of time.

Knowledge Portal

The Program has also developed a NZEB knowledge portal (http://nzeb.in/) to serve the information needs of developers, end users, architects and engineers, policymakers, sustainability consultants, and academia.

The portal provides detailed information about NZEB practices and policy programs in India and other countries. It features a knowledge center to aid design of NZEBs and explains pros and cons of various NZEB design strategies, and energy efficient and renewable energy technology options. Information on international and national case studies, relevant research work and publications is also presented on the portal.

The portal also includes a NZEB Alliance section that is expected to facilitate the forging of an alliance for industry and government collaboration to catalyze, facilitate, and drive large-scale adoption of NZEBs. The Alliance section hosts a discussion forum, expert columns, and membership information which will help build capability of the building sector to embrace NZEB practices, and foster knowledge sharing.



HVAC

India's building sector is forecast to experience large expansion, and the air-conditioning for this space would constitute a significant energy use. Given this scenario, the need to optimize energy use by HVAC systems, takes on added urgency.

The Program has carried out a study on 'HVAC market assessment and transformation approach for India'. The study outlines established practices in the HVAC industry as well as market responses to energy efficiency. The Program estimated the market share of EE technologies in the HVAC industry with the present situation as its base. Furthermore, it sought responses regarding the perception and awareness of EE technologies amongst key decision makers, and barriers to deployment of energy efficiency. The report identifies policy components for industry and consumers to take steps for rapid deployment of EE technologies in HVAC in their buildings.

About the PACE-D TA Program

The PACE-D TA Program is a five-year bilateral initiative led by the U.S. Agency for International Development (USAID) and the U.S. Department of State, and implemented in partnership with the Ministry of Power (MOP) and the Ministry of New and Renewable Energy (MNRE).The Program has three key components: energy efficiency (EE), renewable energy (RE) and cleaner fossil technologies. Within each of these components, the Program's focus is on institutional strengthening, capacity building, technology pilot projects, innovative financing mechanisms and increasing the awareness of clean energy technologies.

Please access www.pace-d.com for more information.

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