



## Saving Energy: Taking Building Efficiency to New Heights

Efficiency is everywhere, but it is an invisible resource and often underutilized. Energy efficiency is the fastest, cleanest, and cheapest way to meet energy needs—India alone could save \$42 billion each year by largely improving energy efficiency in buildings, which currently consume more than 30 percent of the country's electricity. With a projected skyrocketing increase in building-occupied area in India, from 8 billion square meters in 2005 to 41 billion by 2030, any building constructed without optimizing efficiency represents a lost opportunity to lock in energy and cost savings for decades.<sup>1</sup>

To accelerate the adoption of efficiency standards, the Natural Resources Defense Council (NRDC) and the Administrative Staff College of India (ASCI) produced *Taking Energy Efficiency to New Heights*, a report that examines the significant energy efficiency potential of India's building sector, and explores the benefits of and barriers to maximizing it.<sup>2</sup> The report details the major themes, listed below, involved in implementing energy efficient construction.

### India Needs Energy Efficiency Now

India's National Mission on Sustainable Habitat and National Mission on Enhanced Energy Efficiency both focus on scaling building efficiency. In 2007, the Bureau of Energy Efficiency (BEE) launched the Energy Conservation Building Code (ECBC) for new commercial buildings and retrofits with a 100 kW/120 kVA connected load. The ECBC covers all aspects of building design, including the envelope, lighting, heating, air-conditioning, and electrical systems. Although the code is currently voluntary, the Ministry of Urban Development and BEE are working to make the ECBC mandatory; eight states plan to make the code mandatory by 2012. India's two main green building rating systems, Leadership in Energy and Environmental Design (LEED) and Green Rating for Integrated Habitat Assessment (GRIHA), also incorporate ECBC requirements. India now has 161 LEED certified buildings, compared with five in 2005. Since 2010, new central government buildings must be GRIHA certified.

### Building Efficiency: A Win-Win

Everyone benefits from building efficiency, from workers and landlords, to tenants and the public.

- **Competitive advantage:** Developers can increase profits through attractive premiums, lower energy bills, brand value, and higher occupancy rates.
- **Cost savings:** Both tenants and owners save because of lower utility bills.
- **Job creation:** Increasing efficiency creates a need for new services, and directly and indirectly (from re-invested savings) creates jobs.
- **Indoor environmental quality benefits:** Well-designed, efficient buildings increase occupants' health and productivity.
- **Low-carbon growth:** Building efficiency prevents greenhouse gas emissions while enabling effective responses to India's rapid urbanization, energy shortages, and fuel imports.

### What Stops the Adoption of Efficiency Measures?

There are several obstacles to scaling building energy efficiency; however, all of them are possible to overcome. Common problems include:

- **A lack of awareness:** Information about energy efficiency is not always readily available and not widely promoted.
- **Workforce and efficiency product shortages:** Limited skilled workforce and technological unavailability inhibit adoption of efficiency practices.

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**Start-up capital:** The up-front costs are relatively high, which can overshadow the larger long-term savings.

**Split-incentives:** Efficiency measures save money for tenants, although it is the owners who make the financial investment.

**Limited efficiency programs:** Local governments, real estate developers, and financial institutions have limited initiatives available to promote efficiency.

### Take Action: Stakeholders, Step Forward!

**Real Estate Developers** can promote:

- A network of builders and financial institutions to highlight efficiency successes and support adoption of similar practices.
- Awareness of codes, rating systems and programs, and incentives through peer education.

**Financial Institutions** can reap the rewards of the energy efficiency industry by:

- Providing financial products such as insurance and mortgages, with performance clauses and higher qualifying ratios for energy savings, at an early stage of construction.
- Increasing stakeholder interaction by engaging with LEED, GRIHA, and other building certification groups to popularize green loan products and devise innovative business models.
- Creating business opportunities by working with business groups to provide information on green banking.

**State and Local Governments** can:

- Incorporate locally-modified ECBC guidelines into municipal building bylaws.
- Create builder incentives locally through expedited permitting processes, fee reductions, tiered property tax structures, and championing projects that are beyond ECBC compliant.
- Create awareness by holding internal and public efficiency and ECBC training programs.
- Require disclosure of annual building energy use (through utility bills) for buyers, lenders, and tenants.

**Corporate Entities** can benefit and contribute by:

- Committing to annual energy reduction goals and sharing their experiences with stakeholders.
- Encouraging employees to reduce energy use by providing reward programs.

### ASCI AND NRDC's BUILDING ENERGY EFFICIENCY PROJECT

NRDC and ASCI are working to accelerate efficient building construction in India by promoting building codes and engaging stakeholders for widespread implementation of efficiency measures. The next phase of our project focuses on real estate developers and financial institutes at the national level, and local adoption of efficiency measures in Andhra Pradesh, Gujarat, and Tamil Nadu. Link to our report: <http://www.nrdc.org/international/india/files/efficiencynewheights.pdf>

### STAKEHOLDERS MUST FORM A UNITED FRONT

Many groups are affected by, and can benefit from, energy efficiency. Stakeholders must join hands to generate greater awareness, accurate information, effectively-enforced government policies, and coordinated action. India can overcome the barriers to building wide-scale, low-carbon, energy-saving communities by enlisting:

- **Real estate developers:** This group can drive the demand to accelerate efficient building construction.
- **Financial Institutions:** Monetary services for energy efficiency are a new and untapped opportunity for expanding the buildings market.
- **State and central governments:** Local policies must be enacted that create a level playing field to move the bottom of the buildings market.
- **Utilities:** Demand Side Management programs can motivate builders and tenants to exceed ECBC requirements by reducing upfront costs.
- **Corporate entities:** Since many private sector buildings are owner-occupied, efficiency measures offer major savings.
- **Tenants:** Tenant demand for efficiency, through green leases, overcomes split-incentive barriers since both tenants and building owners benefit.
- **Workforce:** Training programs are required to produce a skilled workforce needed to design and implement energy efficient technologies.
- **Efficiency vendors:** Efficiency services and product companies can advocate to create a market for new technologies.
- **Media, civil society, and non-government organizations:** These groups can create a wave of demand for energy efficiency.

**Efficiency Vendors** can form alliances and work with builders to advocate for ECBC implementation.

**Utilities** can play a powerful role by:

- Requiring Demand Side Management proposals to limit peak power demand at the state level.
- Partnering with energy service companies, banks, and developers to implement performance guaranteed contracts that decrease loan risks.

**Civil Society** can have a major role in promoting energy efficiency by producing:

- Media campaigns that promote awareness among targeted stakeholder groups.
- Technology centers that provide the latest information on efficient products and technologies.

**Tenants**, through both public and private groups, can showcase successes of green leases and new efficient tenant build-outs.

**Workforce Sector** can be educated and can contribute by:

- Integrating energy management into university curricula for engineers, architects, and construction workers.
- Establishing worker professional networks that provide independent verification for ECBC compliance.



<sup>1</sup> McKinsey Global Institute, 2009. "Promoting Energy Efficiency in the Developing World." <http://www.globalurban.org/McKinsey%20Global%20Institute%20Report%20on%20Promoting%20Energy%20Efficiency%20in%20the%20Developing%20World.pdf>

<sup>2</sup> <http://www.nrdc.org/international/india/files/efficiencynewheights.pdf>