



CREDIT: WWW.FLICKR.COM/MIJAN_CHEMURPATI

Capturing Energy Savings Opportunities Through Increased Building Efficiency

Energy efficiency is the fastest and cheapest way to meet energy needs. Efficiency is an invisible resource—one that is everywhere—and yet often overlooked. According to McKinsey & Company, India could save \$42 billion each year with enhanced efficiency; and the building sector could be a key source for those savings. Buildings already account for more than 30 percent of India's electricity consumption. Total building space in India will increase from 8 billion square meters in 2005 to 41 billion by 2030. Two-thirds of commercial and high-rise residential structures that will be standing in 2030 have yet to be built.¹ Every building constructed without optimal efficiency represents a lost opportunity to lock in lower energy consumption and increased savings for decades.

Building Efficiency Delivers Widespread Benefits

Energy efficient buildings offer benefits to developers, owners, tenants, and the greater communities. Developers gain a competitive advantage through higher premiums—such as lower energy bills, brand value, health benefits, rebates, and tax credits—that efficient buildings offer. In the United States, buildings with enhanced efficiency generate 10 to 15 percent higher profits and 4 percent higher occupancy rates than unimproved buildings.² Retrofitting can save owners 10 to 50 percent in energy costs, and the return on energy-efficient investments in lighting is as high as 85 percent. Besides upfront savings, some building owners can expect a payback period on their efficiency investments of

three years or less. Tenants also save with lower electricity bills. Efficient buildings are more comfortable for tenants and employees and can be more attractive, increasing their value even beyond the direct savings in utility costs.

Why Building Efficiency is Critical for India

■ **Rapid Urbanization:** More than 215 million people are expected to migrate from rural areas into already-crowded cities, such as Mumbai, Delhi, Hyderabad, Bangalore, and Calcutta. This influx, and overall rise in living standards, will likely skyrocket building construction and energy demand. Efficient buildings are essential to assure sustainable urban environments.

For more information, please contact

Anjali Jaiswal
ajaiswal@nrdc.org
(415) 875-6100

Dr. Srinivas Chary Vedala
schary@asci.org.in
+91-40-66533000

Professor Raj Kiran Bilolikar
rajkiran@asci.org.in
+91-40-66533000



Capturing Energy Savings Opportunities Through Increased Building Efficiency

High-Tech Leadership in Hyderabad

Hyderabad, one of India's leading high-tech centers, is now expanding energy efficiency initiatives. The Hyderabad Metropolitan Development Authority encourages ECBC compliance, and has developed city-wide sustainability guidelines. Hyderabad offers incentives above and beyond national programs, such as a 10 percent rebate to builders who choose solar heating and lighting systems when upgrading buildings. The Administrative Staff College of India (ASCI) and the Natural Resources Defense Council (NRDC) are working with the Hyderabad government to take the steps needed to make efficient building a reality.

■ **Energy Security:** India's energy demand is projected to double or triple by 2030. India already imports 68 percent of its oil, 25 percent of its natural gas, and 13 percent of its coal, according to the Energy Information Administration. Building efficiency will enable India to meet its increasing consumption with the same, or even lower, amount of energy than its current usage, easing India's reliance on foreign supplies of expensive and dirty fuels.

■ **Creating Green Jobs:** Energy efficiency will spur economic growth by generating a market for new building services and technologies. Companies that pioneer efficiency in their markets will gain competitive advantages in a global market for green products and services. The value of this emerging market will be Rs 74,000 crore—or \$16.5 billion—by 2030.³

■ **Reducing Power Cuts and Addressing Climate Change:** India already faces a national electrical shortage of 9.9 percent and a peak demand shortage of 16.6 percent, according to the Central Electricity Authority. This gap results in frequent power outages with buildings especially hard-hit, and over 20 percent peak demand shortages in some states. The Government of India estimates that economy-wide efficiency measures will prevent an increase in demand that is equivalent to 19,598 megawatts, or some 30 mid-sized power plants. In addition to curbing power shortages, energy efficient measures could prevent nearly 100 million tons of carbon dioxide emissions.⁴

India Can Implement Building Efficiency Now

India is already committed to improving building efficiency. In 2009, the Central Government approved the National Mission for Enhanced Energy Efficiency. Among other goals, the Ministry of Power and the Bureau of Energy Efficiency (BEE) have adopted the Energy Conservation Building Code (ECBC), a minimum building standard developed in 2007. Although the ECBC is currently voluntary, the Ministry of Urban Development and BEE will work with state and local governments to make the code mandatory within the next two years. The Ministry of Environment and Forests also already requires large new building projects to comply with the code as part of the environmental impact assessment.

■ **Increasing Efficient Building Construction:** The ECBC covers all aspects of building design—building envelope (walls and windows), lighting, heating and air-conditioning (HVAC), and electrical systems, which improve the quality of new buildings.

Cities and states that implement ECBC now will be promoting sustainability while reducing costly energy bills.

■ **Labeling Buildings:** BEE has created a building label award system that calculates the electrical load of commercial buildings and compares it to a benchmark. Building labels provide transparency to potential buyers and renters in purchasing decisions.

■ **Training Building Professionals:** The ECBC requires in-depth knowledge of building envelope, lighting and HVAC systems. By expanding knowledge and awareness, India can train a new generation of green building professionals. BEE has already developed ECBC User Guides and tip sheets, which are free and available online at <http://www.eco3.org>.

■ **Government Incentives:** The Government of India provides, and is expanding the scope of, financial incentives for new efficient buildings. For example, under the Ministry of New and Renewable Energy's GRIHA certified buildings, developers receive Rs. 2.5 lakhs (\$5,300) if their building has a 3 energy star rating, and Rs. 5.0 lakhs (\$10,500) for a 4 energy star rating; municipal corporations can receive up to Rs. 50 lakhs (\$107,000) for 5 energy star ratings.⁵ Several regional governments are planning similar incentives.

■ **Financial Incentives:** Green loans and mortgages are beginning to take root in India. Banks include operating costs in the mortgage review process and more efficient structures will permit borrowers to qualify for larger and better loans.

■ **Increasing Compliance:** Local governments can start now in assuring code compliance by using a compliance check tool, such as the online tool at <http://www.buildingenergytools.in>.

■ **Benchmarking:** Communities can also create green jobs by training Certified Building Energy Professionals to have expertise in building science and the ECBC, in order to ensure compliance.

■ **Partnering with Energy Service Companies:** Local governments can partner with Energy Service Companies (ESCOs) that provide services on a performance contracting basis to implement energy conservation measures. To date, ESCOs have focused on industrial efficiency, but the commercial building sector represents a new major \$1.6 billion market.⁶

¹ 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>

² The Boston Consulting Group, 2009. "From Gray to Green: How Energy Efficient Buildings Can Help Make China's Rapid Urbanization Sustainable." <http://china.nrdc.org/library/from-gray-to-green>

³ Kumar et al., 2010. "Developing an Energy Conservation Building Code Implementation Strategy in India." Published by USAID and IRG. <http://eco3.org/developing-an-ecbc-implementation-strategy-in-india-report-no-1028-2/>

⁴ Bureau of Energy Efficiency, 2010. <http://www.pib.nic.in/release/release.asp?relid=55875>

⁵ Hyderabad Metropolitan Development Corporation, 2010. "Environmental Building Guidelines for Hyderabad." <http://www.hmda.gov.in/EBRG/site/index.html>

⁶ World Resources Institute, 2010. "Powering Up: The Investment Potential of Energy Service Companies in India." <http://www.wri.org/publication/powering-up>

