PERSPECTIVE

Constructing Change by Advancing Energy Efficiency

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In a power-deficit country like India, energy efficiency can be a new kind of power plant that provides energy to millions who do not have access to it, and where economic growth can be driven by the savings from energy efficiency

A WATERSHED event in human history took place in 2008, when the urban population of the world outnumbered that of the rural. Cities, which occupy a miniscule 0.05 percent of the earth's surface, are projected to hold an immense 80 percent of the world's total population by the end of the twenty-first century. In India too, the rate of urbanization is unprecedented and two-thirds of the commercial and high-rise residential structures that will exist in the country in 2030 are *yet* to be built. This urban sprawl is creating unique challenges related to the natural environment. As a result, to prepare for the coming decades, policy makers need to think innovatively about planning for and taking action on a range of issues from ecological and energy implications to protecting public health. The current urban sprawl and unparalleled demand for the construction of buildings is also creating vast opportunities. Buildings already account for more than 30 percent of India's total electricity consumption. Looking ahead, India's building sector is expected to increase five-fold from 2005 to 2050. India is thus at a unique crossroads with a singular opportunity to lock in energy and cost savings for the next several decadesby implementing energy efficiency in buildings that are being constructed now.

The imperative for efficient construction is much more crucial than the individual savings from which owners and end-users benefit. India's total energy requirement is projected to grow at 6.5 percent per year between 2010-11 and 2016-17, to support the country's projected 9 percent growth rate. The meeting of this energy demand, however, is fraught with the challenges of peak electricity demand shortages, dependence on energy imports and vulnerability to the volatility in international energy prices. Furthermore, India is en route to becoming the world's second largest emitter of greenhouse gases and is already experiencing the adverse impacts of climate change. Each of these challenges can be addressed significantly and effectively by making energy efficiency a central plank in the country's long-term growth planning.

To create this transformation in India's building sector, action is required by a variety of public and

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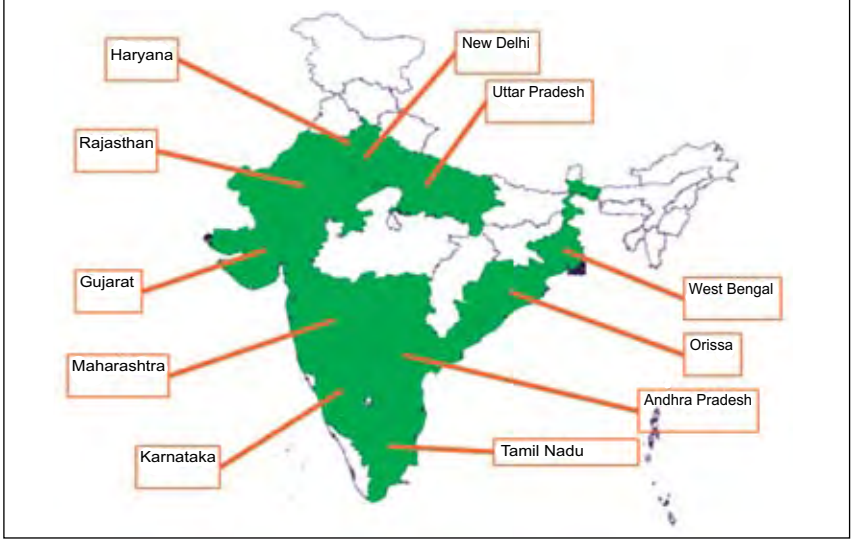
private decision makers. Two groups in particular are critical to this effort: state and local governments, and real estate developers.

First, in the current policy climate, state and local governments are beginning to promote energy efficiency initiatives. India's National Action Plan on Climate Change (2008) points to building efficiency measures as essential to carbon emission reduction. Several national missions that focus on scaling building efficiency have also been initiated, such as the National Mission on Sustainable Habitat and National Mission on Enhanced Energy Efficiency. Effective execution of these national and state level programs will be the key determinants of their success.

State and local governments are vital for setting standards and supporting market leaders to accelerate energy efficiency. States across India are recognizing the importance of taking steps in this direction, for instance, by advancing plans to make building energy codes operational. The Bureau of Energy Efficiency launched the Energy Conservation Building Code (ECBC) for India in 2007. The ECBC establishes minimum requirements for energy-efficient design and construction for buildings with a connected load of 100 kW/120 kVA or more and provides guidelines for building design, including the building envelope (walls, windows), lighting, heating, air-conditioning and electrical systems.States such as Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, New Delhi, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal have all committed to advancing plans to make the ECBC operational in 2013 for new construction. Across the country, the tremendous benefits to be gained from ECBC adoption are being recognized by these states, as seen in the following graphic. Clear frameworks such as the ECBC can provide a necessary baseline for measuring energy efficiency benefits and success at the state and country level.

Leadership by state and local governments is crucial to effectively overcome barriers and transform the building market to be cost-saving. Making the ECBC mandatory and implementing an effective compliance mechanism will ensure that all newly constructed energy-guzzling buildings meet at least a minimum level of efficiency in their energy use. Along with the adoption of the building energy code, an enabling environment for code implementation and compliance is equally important. This is particularly relevant for the India. State governments can create environments that are conducive to code compliance by following a number of best practices. For example, the ECBC can be adapted to the state's local climate conditions, so that it is applicable to the climactic conditions of the geography in which it is being implemented. States can also form local steering committees that oversee ECBC implementation and ensure that the code is incorporated into the region's local laws. Another key factor is creating a skilled workforce with the knowledge base needed to check for quality control and effective building energy code implementation. States can develop this human capital by training municipal officers and empanelling professionals such as architects and engineers on code technicalities. Universities, professional organizations and non-profit groups can assist in providing such training. Government agencies can also award developers with the "most efficient building" to drive market competition, and consider providing policy incentives to both developers and tenants or buyers who implement energy efficiency in new or retrofitted construction. In all cases, having structures in place for monitoring energy use and code-implementation are key to the successful uptake of efficient construction by the community.

Several states have announced plans to make the ECBC operational by 2012 for all new commercial construction, including: Andhra Pradesh, Delhi, Gujarat, Haryana, Karnataka, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.



Second, on the business side, real estate developers drive the demand for building construction. As coordinators of property development—from purchasing land, financing deals and contracting with builders— developers have a large influence over the market's adoption of efficiency practices. By becoming spokespersons for the business case of energy efficiency and through showcasing their first-hand experience of energy savings from buildings, developers will enable other builders across India's booming cities to benefit from cost and energy savings for the coming decades.

Real estate market players across the globe are recognizing the opportunities from energy efficiency and the increasing market demand for green buildings. The benefits to developers from investing in energy efficiency are also becoming more prevalent. These include: the energy and cost savings from reduced utility bills and reduced installations of diesel generators for back-up power; increased tenant demand by customers who are willing to pay higher rents for efficient buildings; and market leadership opportunities for developers who are ahead of the curve as local efficiency codes (such as the ECBC) become mandatory in the next two years. India's real estate developers increasingly recognize the opportunities from being part of this forward-looking trend that demands world-class energy-savings in commercial and residential spaces.

Currently, real estate developers at the local and national level lack awareness about the substantial financial and competitive-edge benefits to them from energy efficiency. This is one of the primary obstacles to rapid efficiency adoption. To move the market towards energy-saving buildings, developers can take action steps such as building awareness about the cost saving and market advantage opportunities from efficiency through peer-to-peer education amongst their community. Developers are ultimately driven by the financial advantage, and champion developers canshowcase the business case for energy efficiency through joint case studies with developer associations and independent third-party organizations. Such studies can analyze the measured energy savings after an energy-efficiency upgrade in buildings or portfolios of buildings. On the financing front, developers can leverage their relationships with financial institutions and banks to create and publicize financing mechanisms that incentivize energy efficiency investment by developers and end-users during building construction, purchase and upgrade. This is important since the higher upfront cost of energy efficiency investments can often be a deterrent to builders, even though the investment pays for itself over time and eventually results in higher cumulative savings. Developers can also work with local governments on policies to provide regulatory incentives to the real estate community that will encourage them to make efficiency investments. This includes creating innovative energy-aligned leases that equally distribute the savings from energy efficiency between the landlord and tenant, so that the savings from efficiency are reaped by the investor. Internationally, progressive developers are signing such energy-aligned or green leases with their tenants, which results in both parties benefiting from reduced costs. Overall, having energy-efficiency spokespersons from the real estate community is crucial to helping India achieve a reliable energy future while simultaneously significantly befitting the developer community.

As India builds at an unprecedented rate in next few decades, there will be increasing demands for new infrastructure that is energy efficient, high performing and cost-saving. At the same time, the demand for energy will continue to rise, increasing the pressure on the already strained electricity infrastructure. Learning from the worst power crisis in history during the summer of 2012,the national and state governments are ramping up support of clean investment, including in buildings, to enable effective responses to India's energy crisis. By implementing smart design features, better lighting, energy-efficient air conditioning and other cost-effective technologies, state governments and real estate developers can become champions that make businesses and homeowners realize measurable savings on their energy bills. It is important that stakeholders across the board recognize that energy efficiency is not just about saving energy, it is a new kind of energy source. In a power-deficit country like India, energy efficiency can be a new kind of power plant that provides energy to millions who do not have access to it, and where economic growth can be driven by the savings from energy efficiency. It is crucial to tap into this invisible resource of energy efficiency – which will not only increase India's energy security and save money but also help fight climate change, protect communities and the environment. ❑

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