MARKET PERSPECTIVE

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Green-Certified Affordable Housing in India

A Case Study on Sustainable Development Concepts and Practices

During the past several years, many real estate developers in India have significantly improved their execution capabilities and adopted sustainable and environmentally friendly development practices. At the same time, home buyers in India have become more quality conscious and now prefer residential products built according to global standards. To meet this growing demand for high-quality homes, several developers have incorporated sustainable development capabilities into their operations. In Delhi's National Capital Region, Red Fort Capital and The 3C Group have successfully launched multiple green-certified affordable housing projects that have generated high levels of customer response and more than 3,700 sales worth US$440 million in revenues despite the global financial crisis of 2008 and 2009. This case study provides an overview of green-certified affordable housing in India based on Red Fort Capital and The 3C Group's experiences, including certification standards and process, end-user and environmental benefits, product specifications, construction cost impacts, and ultimate sales advantages.

AFFORDABLE HOUSING GREEN CERTIFICATION STANDARDS

Today, India has 110 green-certified projects. The Indian Green Building Council (IGBC) has adopted LEED (Leadership in Energy and Environmental Design) standards from the U.S. Green Building Council, with several appropriate modifications for India-specific conditions. Prior to groundbreaking, a developer needs to submit project plan details in order to receive an IGBC registration number. Following such registration, the developer can market to residential end-users that the project will be green-certified according to LEED principles. Residential projects are typically certified according to silver or gold LEED standards, rather than the more intensive platinum level that is typically used in class A office projects to attract multinational and credit tenants.

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The developer then works closely with third-party consultants experienced with green building to design and execute the project according to the desired LEED certification level. Audits are conducted before and during construction, with documentation reviewed by the IGBC to approve both the end-product and the construction process itself (including energy-saving execution methods, topsoil preservation techniques and other factors). The official green certification is then received three to four months after project completion, following post-construction audits to ensure that operational specifications are properly converted from theory to practice. The operational specifications cover water conservation, groundwater recharging, continued usage of energy-efficient lighting and ongoing maintenance practices utilizing environmentally friendly materials. The project will then be audited annually to verify that the operational standards are being maintained.

END-USER AND ENVIRONMENTAL BENEFITS

Green-certified affordable homes and group housing projects in India are designed to have both tangible and intangible benefits for end-users. The tangible operating benefits are the reduction in water and energy consumption for end-users, with electricity savings of approximately 15 percent and reduced water consumption of approximately 33 percent. The intangible benefits are the result of superior green designs and layouts and include enhanced air quality, improved natural lighting, reduced temperature fluctuations and better ventilation.

In turn, green-certified projects have a measurable positive impact on the surrounding environment. Most developing nations, including India, suffer from water table degradation and insufficient municipal water supplies. Green-certified water conservation methods are therefore designed to reduce the use of potable water, recycle grey water for re-use and recharge water tables through rainwater harvesting. In addition, the usage of efficient lighting and captive power-generation methods (including solar technologies) are designed to reduce the demand for scarce fossil fuels and

shrink a project's overall carbon footprint. To reduce soil despoliation, water pollution and land-fill pressure, green-certified projects are designed to facilitate household waste segregation, treatment and recycling. Finally, a green-certified project has reduced dependency on virgin materials, particularly wood, and encourages the use of recycled materials in all areas.

Let in the Light: Lotus Boulevard's 80 percent green spaces facilitate natural light and ventilation. The green-certified project is located in Delhi's National Capital Region.

ENVIRONMENTALLY FRIENDLY PRODUCT SPECIFICATIONS

The images on this page highlight environmentally friendly amenities in two green-certified projects, Lotus Boulevard and Lotus Panache, both located in Delhi's National Capital Region.

In order to procure sufficient points for a silver or gold LEED rating, an affordable housing project must be designed with many of the following specifications across a range of categories:

Site planning and layout: The preservation of natural topography is important, with an emphasis on green cover (including green roofs and vertical façades) to reduce the project's heat-island effect. To improve cross ventilation and natural lighting, group housing can be designed to maximize the number of exposures for each flat. Charging points can be made available for electric cars, and the project should also be accessible to disabled end-users. To discourage the use of automobiles for short trips, shuttle bus service is promoted and proximity to mixed-use amenities is critical.

Water efficiency: Pressure on the water table should be reduced through the use of indigenous plant and grass species, rainwater harvesting, drip irrigation of public green spaces and grey water recycling. Water-efficient fixtures and metering are also important measures to help constrain and monitor water usage.

Energy efficiency: Power-saving techniques include captive power generation, solar water heating, energy metering, on-off sensors, external solar lighting, and efficient interior lighting, windows, appliances and mechanical equipment. "Net Zero Energy" buildings are truly sustainable, with both low energy demand and 100 percent self-generated power supply through renewable sources.

Materials, waste and recycling: During the construction process, waste reduction efforts are emphasized. Materials with recycled content are promoted, including wood, steel and concrete. The use of virgin materials is discouraged, and sourcing from the local region or via salvage is considered a plus. Post-occupancy, waste management and treatment methods are also important for generating LEED rating points.

Indoor environmental quality: Criteria for high-quality indoor air include natural daylight, cross ventilation, efficient exhausts and interiors manufactured with materials containing few volatile organic compounds (among other factors).

Geothermal technology: Geothermal HVAC systems utilize energy-efficient underground loop systems. These systems rely upon constant temperatures below ground (approximately 10 degrees Celsius across most of the globe, regardless of season) to exchange energy between the building and the earth as needed for heating or cooling.

Carbon credit sharing: Carbon credits generated by a green-certified residential project can be sold by the residential association in order to reduce ongoing maintenance costs.

Green on the Top: The Club at Lotus Panache, located in Delhi's National Capital Region, is built with geothermal technology and a living green roof.

CONSTRUCTION COST CONSIDERATIONS

An affordable housing project constructed according to silver or gold LEED standards will cost approximately 5 percent more to construct. Of this additional cost, 80 percent is associated with additional input costs such as recycled materials and efficient fixtures and mechanicals. Today, all inputs required to produce a green-certified project within India are presently available in sufficient supplies domestically, which mitigates execution concerns. The remaining 20 percent of additional construction cost is associated with more intensive construction and site work procedures, including waste reduction efforts as well as topsoil and watershed preservation methods.

BENEFICIAL SALES AND MARKETING IMPACT

A silver or gold LEED green certification provides myriad sales and marketing benefits to an affordable housing project. In any competitive micromarket with multiple supply options, the absorption of green-certified projects is higher than for non-green projects that are comparably priced. In addition, developers of green-certified projects are often able to achieve faster price escalations compared to non-green peers. Overall, developers who plan their green-certified projects appropriately can maintain 30 to 40 percent gross margins within India, which is comparable to the gross margins available in non-green projects today.

A green certification provides real estate brokers and sales representatives with an array of unique selling points to discuss with potential customers and lock in buyer interest. Developers who construct green-certified projects also are considered more technologically savvy and capable of delivering a higher quality product, which is an important correlation that generates further buyer confidence. Customer feedback indicates that green amenities are a top five factor when a purchase is being considered, particularly for younger customers aged 25 to 35 as well as the children of older parents who function as important decision influencers.

In conclusion, residential buyers in India have proven the viability of green-certified affordable housing developments built according to silver or gold LEED standards, which provide end-users with the opportunity to live in environmentally friendly communities, experience world-class construction and amenities, have access to mixed-use infrastructure, reduce energy costs, and shrink their carbon footprints. Most importantly, buyers expect these green-certified benefits at an affordable price, and companies such as The 3C Group have been able to deliver at a price range of US$50,000 to US$125,000 per unit that is within reach of India's middle-class consumer. ❖

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