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An aerial view of an IGBC project

# ACHIEVING GREEN OBJECTIVES

Explore why green construction is becoming a business necessity, delivering cost savings, resilience, efficiency, and long-term value.

by Anil Ramakrishnan

In India, green sustainable construction in India is steadily transforming from a niche, voluntary exercise into a mainstream real estate initiative, driven by speedy urbanization, stringent environmental regulations, and national net-zero commitments. Based on industry reports and expert opinions, it is also set to become an essential criterion for the future of Indian urban planning and construction.

**IMPROVING LIFECYCLE PERFORMANCE**

Innovation in the construction chemicals and advanced materials sector, has led to a robust portfolio of cost-effective, sustainable solutions. Despite the initial price tag for developers, these specialized materials ultimately deliver superior lifecycle performance, offering greater durability and long-term savings.

"Sustainable construction is no longer about higher cost; it is about smarter engineering. When projects are designed with lifecycle performance in mind, solutions like advanced construction chemicals enable both sustainability and profitability to go hand in hand. Our solutions improve lifecycle performance by extending service life through enhanced durability and protection; reducing maintenance cycles and downtime, especially in infrastructure and industrial facilities; and optimizing resource efficiency, including lower energy, water, and material consumption," states Jaswanth Sobhana, Director - Target Market & Product Management, Sika India, a leading construction chemical company.

He explains, "Our low carbon concrete solutions optimize mix designs, enable clinker reduction, and reduce material consumption, delivering both cost efficiency and lower embodied carbon. Our flooring systems are designed for extreme durability, significantly reducing replacement frequency and lifecycle costs, especially in industrial applications. By preventing water ingress and structural damage, these solutions avoid expensive repairs and extend asset life. Our sustainable mortar solutions with lower OPC content help reduce embodied carbon by lowering ordinary Portland cement content while maintaining performance, workability, and application efficiency."



**FOCUS ON LONG-TERM VALUE**

Leading developers and real estate investment trusts (REITs) assess green building features based on their long-term value rather than just upfront costs. To ensure success, they prioritize clear, transparent communication with stakeholders and buyers. For example, from a technical standpoint, lifecycle assessments and long-term operating cost evaluations have helped guide the decisions of Brigade Enterprises.

"Investments in energy efficiency measures, renewable energy systems, such as rooftop solar, efficient HVAC systems, lighting optimization, smart controls, and water-efficient technologies often demonstrate measurable savings over the operational life of the building. Depending on the intervention, payback periods can range from a few years to longer horizons, but the cumulative lifecycle benefits are significant. At the same time, not every sustainability intervention delivers a direct financial payback. For example, sustainable sourcing of low-carbon materials, especially in sectors such as cement and steel where embodied carbon is a major challenge - can still involve a cost premium today. In such cases, the decision is driven less by immediate savings and more by long-term environmental responsibility, carbon reduction commitments, and future regulatory preparedness," Dr. Anurag Priyadarshi, Vice President - Sustainability & ESG, Brigade Enterprises.

"Sustainable construction is no longer about higher cost; it is about smarter engineering."



**Jaswanth Sobhana,** Director - Target Market & Product Management, Sika India

Similarly, some of the key measures implemented by Shriram Properties across projects include adoption of LED lighting and energy-efficient common-area systems; optimized building orientation and natural ventilation to reduce cooling loads; water conservation initiatives such as STP-treated water reuse, rainwater harvesting, and low-flow fixtures; solar-powered common-area lighting and energy-efficient pumps/equipment; use of durable and



Rustomjee Group's Rustomjee Belle Vie Kasara villa plot in Maharashtra

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Parveen Gupta, Director, Ramacivil India Construction

"The biggest sustainability gains often come from design intelligence rather than expensive technology."

locally sourced materials to reduce transportation impact and long-term maintenance costs; and continuous value engineering during the design and procurement stages, informs TV Ganesh, Executive Director -Technical, Shriram Properties.

What is encouraging is that the cost differential for green construction has narrowed considerably in India, states Namrata Nulwalia, Chief Sustainability Officer, Rustomjee Group. "Industry estimates now suggest that the incremental premium for green buildings has reduced to nearly 2–3% in many cases, with faster payback periods due to operational savings. Therefore, in FY2025-26, we have registered more than 70% of our upcoming projects under IGBC for certification as green homes. We have also achieved Gold level under Green homes pre-certification for two of our projects - Rustomjee 180 Bay View and Rustomjee Crescent," she informs.

According to Sika India' Jaswanth Sobhana, the key barriers to wider adoption of advanced sustainable materials include upfront cost sensitivity, wherein stakeholders still prioritize lowest initial cost over lifecycle value, which slows adoption; limited lifecycle cost awareness because decision-making often lacks a full understanding of total cost of ownership; budget constraints where even modest cost increases can impact affordability in price-sensitive markets; execution and capability gaps since advanced systems require proper design integration and skilled application; and policy and incentive gaps, because even if incentives exist, consistency and clarity across regions are low. "Going forward, greater awareness, stronger value communication, and integrated system solutions will be critical to accelerating adoption," he emphasises.



Brigade Group's Net Zero apartment, Brigade Citrine, Bengaluru

**REDUCING COST, MAXIMIZING PERFORMANCE**

While designing a green building in India no longer requires a premium price tag, many projects still overspend by chasing sustainability goals inefficiently. However, this is entirely avoidable. By prioritizing smart, integrated design from the outset, developers can simultaneously reduce construction costs and maximize environmental performance.

The capital premium can be negligible, if climate responsiveness, orientation studies, envelope performance, structural optimization, and MEP efficiency are addressed at the concept stage, asserts Parveen Gupta, Director, Ramacivil India Construction. "The real cost escalation happens when sustainable features are introduced after design freeze. Today, with better simulation tools, local material ecosystems, and integrated engineering, green buildings can be delivered with strong cost discipline while achieving measurable







P GopalaKrishnan, Managing Director, Southeast Asia and Middle East, GBCI

"Optimising orientation, maximising natural light, right-sizing mechanical systems – these decisions cost almost nothing at the design stage."

reductions in energy intensity, water consumption, and operating expenditure," he explains.

Integrating sustainable 'green' thinking right at the concept stage is far more cost-effective than deciding to pursue certification halfway through design or during construction. By the later stages, key decisions are already locked in, making any retrofitting efforts expensive.

There is also a tendency to reach for high-cost imported systems when locally available options would perform just as well, sometimes better given Indian climatic conditions, according to P. GopalaKrishnan, Managing Director, Southeast Asia and Middle East, Green Business Certification Inc. (GBCI). "Teams can end up chasing credits that are technically achievable but not the most cost-efficient path to the rating they want. That is where a good Leadership in Energy and Environmental Design (LEED) consultant earns their fee many times over. Optimising orientation, maximising natural light, right-sizing mechanical systems – these decisions cost almost nothing at the design stage and they pay back consistently over the building's life," he says.

Sustainable construction starts with good design. Climate-responsive architecture considerably cuts energy demand before any tech is installed. By optimizing building orientation, façades, insulation, daylight, natural ventilation, shading, and space planning, we can significantly lower cooling and lighting loads from the outset.

Giving a regional perspective, M Anand, Deputy Executive Director, CII - Indian Green Building Council (IGBC), says in India, traditional architecture and design practices have long been in harmony with nature, and when combined with modern design and technologies, they create a strong balance between innovation and sustainability. "Today, design and technology form the foundation of a green project, enabling projects to achieve their sustainability goals. In the Indian context, this integrated approach delivers long-term benefits. IGBC buildings are recognized for lower operational costs due to reduced consumption of water, energy, and other resources compared to conventional buildings. Material selection also plays an important role. Using locally sourced materials, recycled content, low-carbon products, regenerative building materials, and efficient structural systems can reduce embodied carbon while often lowering transportation and lifecycle costs," he adds.

Making green construction the standard approach in India requires a few strategic updates, particularly ensuring that current regulations and certifications align with realistic project costs. Green construction will become mainstream when sustainability is embedded into the entire project value chain rather than treated as a specialist layer - which means integrating carbon accounting, energy modelling, water balance analysis, and lifecycle costing into standard design workflows, believes Gautam Gupta, Director, Ramacivil India Construction.

He explains, "Supply chains need greater access to certified low carbon materials, recycled aggregates, efficient building systems, and prefabricated solutions. Financial institutions must recognize performance-based assets with better lending terms. Once operational efficiency, asset resilience, and ESG performance directly influence valuation, green construction will naturally become the default development model in India."

"India is already witnessing strong momentum in green building adoption across commercial, residential, industrial, and public infrastructure sectors."



M Anand, Deputy Executive Director, CII - IGBC





Gautam Gupta, Director, Ramacivil India Construction

"Financial institutions must recognize performance-based assets with better lending terms."

Demand for green buildings is surging among tenants and investors alike. While developers have traditionally led the charge, many now foresee sustainable construction becoming the baseline standard for their entire portfolio over the next few years.

In industrial clusters, there is a clear and growing push from tenants and investors, who are increasingly insistent on energy-efficient and ESG-compliant properties, while residential market still leans more towards developer-led adoption, points out Anshu Shukla, Chief Design Officer, Mahindra Lifespaces. "Most residential customers do not yet prioritize IGBC or LEED certification as a must-have when purchasing a home. While there is evidence—such as the 2024 Xyntec-linked report—that some buyers, especially in premium urban segments, are willing to pay a 5–10% premium for sustainable living, this trend

A few key changes are needed to make green construction the default approach in India, feels Sanjay Seth, Senior Director, Sustainable Infrastructure, The Energy and Resources Institute (TERI) and Vice President & CEO, Green Rating for Integrated Habitat Assessment (GRIHA) Council.

"We have to create best-practice toolkits in open-source knowledge platforms without any financial or institutional barriers, providing information on energy performance, cost implication, building materials efficiency, etc. Also important is documenting and disseminating information about case studies highlighting design strategies, performance outcomes, cost savings, challenges and payback periods. GRIHA Council's online product catalogue offers verified information on green building products. GRIHA Council also curates case study cards for every completed and rated project. Mainstreaming green building mandates into local byelaws can help create a uniform statutory framework that aligns with local development practice and the broader national sustainability goals. Strengthening technical capacities at subnational levels including municipal bodies, urban local bodies, local building officials can enable effective enforcement of green building guidelines and sustainable building practices at the local levels. Integrating green performance standards in large-scale infrastructure ensures system-level resource efficiency, optimization and resilience. GRIHA Council has developed tailor-made rating frameworks to expand the evaluation spectrum from buildings to overall infrastructure development," Sanjay Seth elaborates.

"Mainstreaming green building mandates into local byelaws can help create a uniform statutory framework that aligns with local development practice."



Sanjay Seth, Senior Director, Sustainable Infrastructure, TERI; and Vice President and CEO, GRIHA Council

**DEMAND FOR ENERGY EFFICIENCY**

has not yet permeated the mass market. For value homes, green features are appreciated but are not a dealbreaker. Ultimately, what sets a project apart today in terms of green credentials is poised to become standard practice within the next three to five years, as sustainability moves from being a differentiator to an expected norm in the industry," she highlights.

Adds Hriday Desai, Chief Development Officer, Embassy Developments, "In our premium and luxury residential segment, end-users are increasingly asking the right questions about air quality, energy costs, water recycling. This is most pronounced in Bangalore and South Delhi. Among institutional investors and corporates evaluating real estate assets, green certification is now close to a prerequisite for serious consideration.

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**Dr. Anurag Priyadarshi,** Vice President - Sustainability and ESG, Brigade Enterprises.

"Group captive renewable energy arrangements can offer significant long-term savings on electricity costs while reducing carbon emissions."

However, in volume-driven affordable and mid-income segments, the push remains largely developer-led. This is where regulation will need to play a stronger role to achieve any meaningful sector-wide shift."

Godrej Properties has already institutionalized green building certification requirements, with all developments targeting at least IGBC Silver or equivalent standards. Going forward, sustainability will become even more deeply integrated into project design, procurement, material selection, construction practices, and operations, states Rohit Mohan, Chief Design and Sustainability Officer, Godrej Properties.

He elaborates, "The industry is moving toward a future where resource efficiency, low-carbon materials, renewable energy integration, climate resilience, and responsible supply chains are no longer optional differentiators, but core business requirements. We are also focused on decarbonizing our Scope 3 emissions by engaging with suppliers and exploring lower-carbon alternatives in high-impact materials such as steel, cement, concrete, and glass. As technologies mature and supply chains evolve, sustainable construction practices are expected to become increasingly mainstream across the sector."

**SUSTAINABLE GREEN INTERVENTIONS**

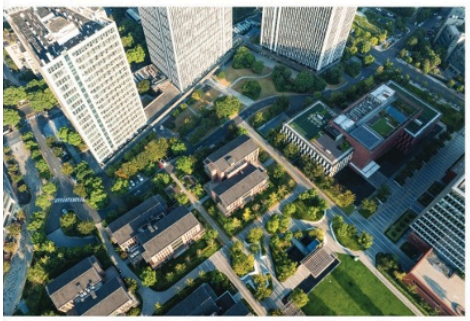
There are several sustainable green interventions that offer a quick path to ROI for real estate developers and REITs in India.

Energy-efficient lighting systems, smart metering, low-flow water fixtures, wastewater recycling and efficient HVAC technologies tend to show clear operational benefits relatively quickly, says Namrata Nulwalla of Rustomjee

"We focus on continuous value engineering during the design and procurement stages."



**TV Ganesh,** Executive Director -Technical, Shriram Properties



Modern city with green tree around,energy efficiency concept

Group. "Good design itself is one of the most powerful sustainability tools. If a building is designed to optimise daylight and ventilation naturally, it significantly reduces long-term energy dependence while simultaneously improving occupant comfort. Renewable energy adoption is another area where economics have improved substantially. Solar integration, especially in common infrastructure and clubhouse facilities, is becoming increasingly viable. At Belle Vue, our Net Zero Carbon Clubhouses are designed to operate entirely on solar energy supported by passive systems and energy-efficient technologies," she adds.

Some of the interventions that deliver the fastest

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**Anshu Shukla,** Chief Design Officer, Mahindra Lifespaces

and most visible returns, according to Godrej Properties' Rohit Mohan, include LED lighting and energy-efficient electrical systems, Solar energy installations for common areas; Efficient HVAC systems that significantly reduce operational energy costs; Water efficiency measures such as low-flow fixtures, treated water reuse, and rainwater harvesting; and Waste reduction and material optimization practices during construction.

By prioritizing solutions such as LED lighting, BLDC fans, high-efficiency pumps and motors, motion sensors, and optimized lighting for common areas, Mahindra Lifespaces has achieved substantial reductions in operating expenses. "According to our sustainability page, these initiatives have resulted in annual savings of ₹141 lakh. Additionally, water efficiency improvements—such as advanced water management systems—further enhance our cost savings. These interventions have proven highly effective in areas including clubhouses, basements, lobbies, sewage treatment plants, and sales offices, reinforcing our commitment to operational efficiency and sustainable development," says Anshu Shukla of Mahindra Lifespaces.

Renewable energy integration, particularly through solar solutions and group captive renewable energy models, has emerged as one of the most commercially attractive interventions in the commercial real estate segment, mentions Dr. Anurag Priyadarshi of Brigade Enterprises. "Group captive renewable energy arrangements, supported by enabling policy frameworks in states such as Karnataka and Maharashtra, can offer significant long-term savings on electricity costs while simultaneously reducing carbon emissions. Depending on project structure, regulatory

> "In industrial clusters, there is a clear and growing push from tenants and investors, who are increasingly insistent on energy-efficient and ESG-compliant properties."



Shriram Park 63 - Shriram Properties' luxurious apartment complex in Chennai

> "For developers who treat green construction as a compliance exercise or a marketing layer, there is a risk of being left behind."



**Hriday Desai,** Chief Development Officer, Embassy Developments

approvals, and state policies, these initiatives can become operational within relatively short timelines and deliver attractive payback periods over the lifecycle of the asset," he emphasises.

**FUTURE MOMENTUM**

The biggest sustainability gains often come from design intelligence rather than expensive technology, asserts Parveen Gupta of Ramacivil India Construction. "Optimizing building orientation can reduce solar heat gain. High



**Namrata Nulwalla,** Chief Sustainability Officer, Rustomjee Group

performance façades can lower cooling loads. Structural grid efficiency can reduce concrete and steel consumption. Daylight analysis can minimize artificial lighting demand. Water sensitive landscape planning can reduce potable water dependency. When digital modelling, energy simulation, and lifecycle costing are integrated early, every square foot works harder, every material performs better, and both embodied and operational carbon are reduced alongside project cost," he states.

> "If a building is designed to optimise daylight and ventilation naturally, it significantly reduces long-term energy dependence while improving occupant comfort."





> "We already institutionalized green building certification requirements, with all developments targeting at least IGBC Silver or equivalent standards."



**Rohit Mohan,** Chief Design and Sustainability Officer, Godrej Properties

Occupier expectations are rising, regulatory frameworks are tightening, and the long-term financial case for sustainable construction is simply too strong to ignore at a portfolio level, opines Embassy Developments' Hriday Desai. "For developers who treat green construction as a compliance exercise or a marketing layer, there is a risk of being left behind. For those who embed it into procurement, design, and operations thinking, it becomes a genuine competitive and commercial differentiator," he says.

Transforming green construction from a premium niche into India's mainstream standard requires a unified push across policies, industry collaboration, and market mindset. To accelerate this transition, sustainability must be deeply integrated into everyday urban planning and procurement systems. This shift can be heavily incentivized by offering developers tangible benefits, such as expedited approvals, tax benefits, dedicated financial backing, and lower borrowing costs for sustainable projects.

Says M Anand of CII – IGBC, "India is already witnessing strong momentum in green building adoption across commercial, residential, industrial, and public infrastructure sectors, and the next step is to make this transition more inclusive, scalable, and affordable across the country. Today, with over 19,330 IGBC-registered green building projects and 15.9 billion sq. ft. of green building footprint across the country, India has already demonstrated several islands of excellence within the sustainable development space."

Anand adds, "With stronger policy frameworks, increasing industry participation, and growing awareness, the momentum is only expected to accelerate further."