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The complexities of constructing high-rises are never-ending. While real estate developers are well-versed with building tall structures, there are several aspects that need careful consideration. Right from soil test to structural analysis to wind load, not to forget checking every material that goes into making the tall storey stand for decades to come are just some of the considerations. Over the last few years, developers are also required to adopt materials that help in conserving energy and water, generate less heat and waste and minimise maintenance costs. It started as just another trend. However, the green construction movement has since gained much-needed momentum, more so in the recent past, after its merits have caught the attention of developers and end-users alike.

Estimates suggest that even in advanced economies, the climate is highly impacted by energy consumption from commercial and other buildings. It is for this reason that reducing energy and water usage, and supplementary measures, are turning into key drivers for the green construction crusade. Along with conserving natural resources, green or sustainable buildings also aim to reduce construction waste by optimising the consumption of materials and lowering greenhouse emissions. As a matter of fact the whole objective of the green construction technique is to design and construct buildings that use resources wisely for creating healthier buildings. And developers have started valuing the benefits provided by such buildings, whether it is more natural lighting, better air quality with adequate circulation, or conserving water and electricity. With awareness among consumers rising, such buildings are becoming a popular choice for users, who are willing to spend on such premium products in the short-term to enjoy staggered benefits overtime. In turn, green buildings are also raking in improved profits for the developers that build them.

## PRESENT STATE

While there could be minor variations about India's current situation and global ranking on the basis of the total area covered with certified green construction, there is no doubt that the country is among those top-ranked, internationally. This is commendable for a country that commenced its 'green journey' only in the last decade or so. Of course, there have been numerous helping hands along the way. The Indian Green Building Council (IGBC) is one such monitoring agency that was formed in 2001 as a part of the Confederation of Indian Industry (CII). M Anand, principal counsellor, CII-IGBC, says, "The green buildings journey in India has been both inspiring and fulfilling. Today, as a result of concerted efforts, with over 463 billion sq-ft, India stands at number two in the world, in terms of the largest registered green building footprint with projects spread across the five climatic zones of the country. The IGBC aspires to facilitate 10 billion sq-ft of green building footprint by 2022."

Dr Niranjana Hiranandani, founder & GMD, Hiranandani Group, and founder and first president, National Real Estate Development Council (NAREDCO-Maharashtra), states, "Indian real estate understands the positives of green construction. The advantages of green buildings are all too apparent, and this is a segment that is gradually rising in terms of demand from end-users as also projects planned by real estate developers"

Ashish Rakheja, managing partner, Aeon Integrated Building Design Consultants LLP, agrees, "India continues to exert its dominance in the green building movement across the globe. The last two decades of the green movement have generated awareness amongst professionals engaged in construction activities. The Government has also chipped in by providing benefits to developers and mandating a green rating for new buildings that are under construction."

Rajesh Pandit, managing director, asset services & global workplace solutions, CBRE South Asia, also echoes this view on India's achievement when he suggests, "India ranks third among the top 10 countries in the Leadership in Energy and Environmental Design (LEED) green building rankings 2017, carried out by the United States Green Building Council. Canada topped the green rankings, followed by China and India. As per IGBC, with a small beginning of 20,000 sq-ft green built-up area in the country in the year 2003, today (as on August 2017) more than 4,205 green buildings projects are coming up."

## MIGRATING TO GREEN

Ever since the debate over global warming and the need for green initiatives has begun, too clear objectives that have emerged are reducing energy usage and conserving water resources. These have since been coupled with similar targets surrounding the reduction of construction waste and greenhouse emissions. Pandit points out, "Buildings are currently responsible for more than 40% of global energy and one third of global greenhouse gas emissions. With rising urbanisation in the past few decades, extensive use of bricks, cement, concrete and steel in buildings has led to climate change and local environmental destruction."

Though the goals seem challenging, the long-term benefits to all stakeholders makes migration to the green method vital. Anand points out that, "Green buildings have become the new global order and stakeholders are going that extra mile to convert their existing and upcoming buildings into green and earth-centric ones. This augurs well for a greener tomorrow."

Anubhav Gupta, chief design officer and head, CSR & sustainability, Godrej Properties, proudly suggests that 92% of their portfolio is green-certified. They are even exploring options for their older buildings to be retrofitted to move towards their goal of 100% certification for their entire portfolio. "Building green and with user-led sustainability in mind has been part of the foundation and bedrock for all developments by Godrej Properties. Our goal in creating green homes is not only to be responsible to our environment, but also help our customers optimise their use of resources and live greener lives. The true benefits of a green, home are realised by the homeowner through reduced energy and water usage and a higher quality of life through better indoor air quality," believes Gupta.

Rakheja hits the nail on the head when he proclaims, "Green is a mind set and not a product. Adoption of sustainable strategies in a building commences with the intent demonstrated by the owner that is converted into design by architects & engineers, which in turn becomes a reality with practices adopted by the construction workers & building operators, and is thereafter embraced by the end-user."

Explaining how this is achieved, a Kalpataru senior spokesperson offers, "Kalpataru has incorporated the norms of green buildings in the design and development of most of our projects and has defined a Green Building Design Guideline<sup>1</sup> for various departments. Kalpataru adopts an integrated design approach for the projects covering several fields like Architectural, Structural, Electrical, Plumbing, Landscape, Energy and Environment. This approach ensures a holistic design and enhances project value."

As of August 2017, Kalpataru claims to have a cumulative green building footprint of 32 million sq-ft. Getting projects green-certified by IGBC and LEED agencies is becoming a key trend in the market, with the Government also encouraging and incentivising such projects. Shab-bir Kanchwala, senior VR K Raheja Corp, professes that, "We have been ahead of the curve in the green development sector. As a responsible developer, we have a 'Green Vision' that all our commercial as well as residential projects across the country will be LEED & IGBC green-certified. Various initiatives are taken up under these green rating programmes to increase awareness and optimal utilisation of green developments."

## SUSTAINABLE INNOVATION

Stakeholders from the industry are unanimous in their opinion regarding one aspect that green turns into clear savings for everyone, including the end-consumer. This is because green or sustainable initiatives are spread over the life cycle of the project and hence the benefits planned are over the longer term and more sustainable.

"Initiatives towards embracing green construction methods & materials continue to be reported from various parts of country. This trend can easily be witnessed today, wherein India is a leader in the adoption of new technologies like flyash block, water-efficient plumbing products, Variable Frequency Drives (VFD), LED lamps, inverter ACs etc.," feels Rakheja. "The green movement has also spurred India-specific studies in related areas like thermal comfort benefits of day-lighting, energy & water conservation, green & lean construction codes etc., which are at par with work being done in developed countries," he adds.

Anand concurs, "Stakeholders are incorporating the latest and emerging green building technologies, software tools which are going a long way in addressing national priorities and enhancing the quality of life for the occupants. Today, recycled or recyclable green building products & technologies are gaining increased importance in the building design philosophy."

Ashok Mohanani, chairman and MD, Ekta World, opines, "Since the environment is an imperative stakeholder when buyers make a home buying decision, it should be their priority to scout for sustainable property, which focuses on the usage of less water, is high on energy-efficiency, produces reduced waste, preserves more natural resources and has an improved indoor ecological quality than a regular

building.&quot;

Explaining their stance, Amit Ruparel, MD, Ruparel Realty, supplies, "Green homes help in reducing artificial heating and cooling as they make use of energy-efficient and strategic insulation. Even the materials used to construct green homes are locally sourced, biodegradable, non-toxic, and renewable. Apart from the usage of natural sources for lighting in common areas of the house, we have also used a rainwater harvesting system. In addition, we have also added a waste water recycling plant to remove contaminants from waste water and reuse it as a water supplement to maintain green premises in the vicinity.&quot; He further adds, "The initiatives adopted are eco friendly, sustainable and can function using natural resources like solar power, rainwater etc.&quot;

## MAKING IT VIABLE

The best part is that there is complete agreement on the belief that the green approach is totally viable in economic terms. Mohanani explains, "On an average, green buildings cost about 12-18% more than normal buildings in India. But in the long run, green buildings save up to 25-35% on energy use. Green buildings help address the global concerns of water depletions, energy savings, reduction of fossil fuels and conservation of natural resources. Significantly, these concepts also enhance the well-being and health of the residents."

Ruparel echoes this sentiment. "From a builder's perspective, it allows us to make wise choices of materials and reduce the carbon footprint, whereas from the buyer's point of view, he benefits from a more natural home that's also easy maintenance,&quot; he says.

Kanchwala too emphasises this 'value for money' argument, when he suggests, "Going green not only helps in saving money on operating costs, but it also provides a better return on investment than less efficient buildings. Use of technology helps in the green efforts, benefiting both the workforce and society as a whole, reducing operating costs and elevating brand value.&quot; Some of the innovations and technologies employed at K Raheja Cero's projects include Net Zero Concept (zero energy and zero water concepts) and water recycling etc.

Gupta reveals that Godrej Properties has tested this economic viability challenge. He says, "We were also able to prove that green buildings may not necessarily cost significantly higher than regular buildings, and there were ways and means to make up the delta in spends. Finally, as part of our CSR mandate, we established sustainability as a key priority measured against reducing energy, waste, water and emission footprints. Today, we are managing to sustain our business alongside doing the right thing for the environment."

Dr Hiranandani sums this up well, when he says, "I would not agree that going green is expensive, as green materials and technologies are available at cost-efficient prices. Also, we need to keep in mind that the Government has made all green compliance mandatory in the planning and design stage.&quot;

With the direction for the future well-defined and widely understood, one cannot be complacent in acknowledging the challenges ahead. As Rakheja warns, "The biggest challenge ahead is the lack of training amongst the construction workforce and operator/maintenance practices that threaten to make the capital investment redundant."

Hence, the need for a well trained team led by a competent project manager cannot be disregarded if one has to achieve success within the green construction sphere. After all, no matter how strong the intent to go green, it's crucial to have an infrastructural framework to support that quest. Fortunately, things are quickly falling into place in India, and the country seems ready to witness a greener tomorrow,&nbsp;













