

The demand for green has to come from the consumers

Sustainability is an age-old concept and has been ingrained in the Indian culture, says **SANJAY SETH**, Chief Executive Officer, GRIHA Council



What constitutes green buildings?

Reducing environmental degradation and providing occupant comfort are the key features of a green building. Green buildings are resource efficient, which save more than 40 per cent water and energy, as compared to conventional buildings. Green buildings also have reduced operational costs which in itself pays back over a very short period for any incremental in costs. Resource optimization is considered to be the key for cost savings and green buildings truly follow the same concept. Some of the major benefits of a green design to a building owner, user, and the society as a whole are reduced energy and water consumption without sacrificing the comfort levels, reduced destruction of natural areas, habitats, and biodiversity, preventing soil erosion, to control land pollution, reduced air and water pollution (with direct health benefits), limited waste generation due to recycling and reuse and increased user productivity and efficiency.

What are the procedures required for acquiring green rating?

The process varies across individual rating agencies. The GRIHA Council provides constant and-holding support and post occupancy performance audits as a unique

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feature of the GRIHA rating process. As a first step towards acquiring GRIHA rating, we conduct a feasibility study at the design stage. The project proponents may wish to appoint additional consultants if felt necessary for facilitating the GRIHA rating. Thereafter, the project is required to register itself with GRIHA Council, after which an orientation workshop is conducted for the entire project team comprising of the client, architect, MEP Consultants, landscape consultants, project manager, etc. The outcome of the workshop provides a roadmap for the GRIHA rating process along with identification of responsibilities within the project team for various GRIHA criteria. Two site visits are conducted during construction to provide guidance to the project and verify the compliances on site. The third and final site visit is done after the completion of the project. Once the project is complete, the project team is required to compile all the information and evidence to demonstrate compliance with the respective criteria and submit it to the GRIHA Council for a award of rating. The award of rating is done after the documents are reviewed and validated by third party reviewers. As a final step, project is required to submit post occupancy performance audit data for

minimum one year's duration, to validate the claims. The process defined above is an indication of the robust rating process which is a key attribute of the GRIHA rating system.

Kindly takes us through the history of green building movement in India?

Green building may be a modern term but sustainability is an age-old concept and has been ingrained in the Indian culture since always. Over the centuries, various regional styles of construction have evolved in the country governed by the usage pattern, social behaviour and climate. This was

of thermal and visual comforts and mainly rely on mechanical cooling and heating & artificial lighting. This is in contrast with the traditional buildings that provide comfortable living environment without any mechanical cooling or heating and have low environmental impacts. As a result, the modern green building movement followed with formal certifications started in India less than 2 decades back.

What are the current developments taking place in green buildings? What are the current trends in green buildings?

regulations together within increase market awareness and outreach have seen an increasing trend for green/sustainable designs and products. The increasing market share of these green technologies and products have also helped in bringing down the costs of such products substantially, which was one of the major impediments affecting the growth of this sector. In order to accelerate the greater penetration of green buildings in the infrastructure sector the government and ULBs have also introduced incentives to developers in terms of additional FAR. The Government constructions have also mandated adoption of green building practices and performance standards to lead by example.

What are the challenges in the growth of green buildings development in India?

The biggest challenge affecting the growth of this sector is the lack of awareness and demand among the end users. The demand for green has to come from the consumers. Green Buildings are still projected and perceived to be expensive by the developers which act as a deterrent among the consumers from investing in them. The concepts of life cycle costs and pay backs are not well understood by the consumers and the first costs become the drivers for decision making.

How receptive are builders to green buildings?

There are no mandatory regulations in place to develop green buildings. Many developers use green as an image to lure consumers without adopting sustainable design practices. However, there are a few builders committed to the cause and make extra efforts of not only constructing to the green practices but also going the extra mile of getting a certification in support of the sustainability parameters. As has



done predominantly using locally available materials and hence was inherently sustainable. The scenario is very different in today's time where the demand of buildings has increased manifold. Moreover, globalization has given access to international technology and in the present era of mass production, traditional building construction practices have slowly dwindled to give way to concrete, brick and glass construction. These modern materials offer ease of execution, faster construction techniques, high durability, low maintenance in addition to thinner walls that help offset rising land costs. But, most of the modern buildings provide a much lower degree

Initially, the green building certification was only for commercial new construction buildings, since they are the most resource intensive. However, over time it was realized that there is a lot of exiting building stock which needed to be addressed to achieve sustainability in the building sector. The trends have also revealed that among new construction projects, majority are housing projects. Due to these reasons, the green building segment has diversified to include more technologies to create a wider impact.

The market has been growing at a gradual pace and during the last 5 years there has been a noticeable shift towards green buildings. Government

been discussed earlier, it is the end consumer who has to demand for green buildings which will eventually create the market for the developers to construct green buildings. Similarly, the perceived incremental cost for constructing a green project also inhibits the developers from going green. The issue of split incentive whereby the developer does not see an economic value for constructing green adds to this dilemma.

Green buildings are perceived as costly. What is your take on this?

To achieve best green rating, the right combination of passive and active design strategies must be used to minimize resource consumption. Passive design strategies try to maximize the use of freely available natural energy sources like sun and wind instead of electricity. These strategies incur very little or no additional cost and include incorporation of day-lighting and natural ventilation. Active design strategies use electrical energy to keep the building comfortable. These strategies incur some cost and include efficient artificial lighting and heating, ventilation and air conditioning systems. In the current industry practice in the country, ACs, lighting and other equipment are not provided by the developer in residential complexes. Hence, the performance of the building is enhanced by having more efficient walls, windows and sanitary fixtures that incur minimal additional cost. As a result, the cost of ownership of a green building is same or similar to regular buildings.

Moreover, green buildings can be constructed with minimal additional cost if sustainability is incorporated at the design stage instead of an after-thought. For example, if the windows are placed in the right orientation with optimum shading, the additional cost

of installing higher efficiency glass can be avoided. Further, green buildings have reduced operational costs which pay back over a very short period for the incremental cost, if any, during construction. Resource optimization is key for cost savings and green buildings follow the same concept. The operational costs of a green building are much lesser due to reduced energy and water bills as compared to conventional building. It is important to note that operational costs are critical as electricity tariffs keep rising over time due to fuel costs. The other operation and maintenance costs are no different than a normal building.

How is the government contributing in the growth of green building movement in India?

Government policies play a very critical role in promoting sustainable development. It also creates a much-needed demand for green or sustainable buildings. The addition of a new chapter on sustainability in the National Building Code is a huge step towards large scale adoption and implementation of Green Buildings in India. It has also been observed that lot of impetus is being given by the government to align the regional building codes with the national agenda of promoting sustainability and reducing GHG emissions. As discussed earlier, the Government has mandated the adoption of green building design parameters and green certification for most of the public buildings to lead by example. Although building codes and standards are a voluntary phenomenon, many states and ULBs have either mandated or incentivized green buildings to spur the market towards this movement. There has been a gradual increase in trend of green building constructions in line with the supporting policies of the government.

How has been the growth in the last three years and in the coming two year what will be the growth drivers and prospects?

As discussed earlier, there has been an increasing trend in the growth of green buildings consistently over the past 3 years. The demand for green certification has significantly increased in the states and municipalities where incentives are being provided to the developers for green constructions. Announcement of additional FAR incentive for GRIHA rated projects in states like Haryana, Punjab and Uttar Pradesh are the most striking examples. The smart city programmes yet another growth driver for this sector, as at least 80% of the up-coming buildings are required to be energy efficient and green as per the essential features of the Smart City Programme (SCP). These initiatives would generate increasing interest in the developer community to construct all future upcoming projects as green. Simultaneously, the manufacturing sector is also poised to tap the increased demand of green and environmentally friendly material, products and technologies, necessary to construct green buildings.

What are the steps GRIHA Council is taking to create more awareness of the benefits of green buildings?

Right now the technical prowess and expertise among architects and design professionals is concentrated in metropolitan cities. The GRIHA Council is working towards expanding this cadre of trained professionals through its regular training and capacity building programmes. The three-day intensive certification training programmes are being organized regularly once every month covering different cities across India. Simultaneously, outreach and awareness programmes to create awareness among the common



consumers on the benefits of the green buildings are also being conducted through the length and breadth of the country. The GRIHA Council aims to decentralize the technical skills required for designing and constructing a green building thereby making it accessible to the building practitioners.

In addition, case studies showcasing the benefits of green buildings, innovative products and technologies introduced in the market and trends on new construction practices are regularly portrayed on platforms such as the annual GRIHA Summit and other similar conferences and seminars. The GRIHA Council is also engaged with large establishments such as the

has been continuously supported by them. GRIHA rating system has found wide acceptance by various Government agencies. CPWD was the first government agency to adopt GRIHA ratings for its projects and updated its schedule of rates to incorporate minimum 3 Star compliance for all projects. Urban Local Bodies (ULBs) such as the Pimpri Chinchawad Municipal Corporation (PCMC) was one of the first municipalities to announce incentives for GRIHA Certifications. All the upcoming projects of prestigious institutes such as the IITs, IIMs and AIIMs are registered for GRIHA. Airport Authority of India

country compare to India?

The basic concept of green building remains same irrespective of the country, but the approach to sustainability varies from region to region depending on the climate and construction practices. Today, many countries around the world have developed their own rating systems for green certification of buildings based on their domestic regulations and standards. GRIHA certification has been developed specifically to suit the construction practices and climatic conditions relevant to India and other similar tropical countries.

How is GRIHA Council contributing in the growth of Green Building movement in India?

GRIHA is an indigenous rating system developed to suit the local climate and construction practices. The GRIHA Council has also been enhancing its ratings to suit to the changing markets and align with evolving government policies. It integrates all the national standards, codes & regulations such as National Building Code (NBC), Energy Conservation Building Code (ECBC), Environmental Clearance Guidelines and similar notifications of the Government issued from time to time. GRIHA also compliments implementation of the national policies such as the Solar Mission, Swachh Bharat Abhiyan, AMRUT and the Smart City Programme.

GRIHA has even been acknowledged as India's own green building rating system, is a tool to evaluate reduction in emission intensity through habitats. GRIHA is part of mitigation strategy for combating climate change in INDIA's "Nationally Determined Contributions" submitted to UNFCCC by the Ministry of Environment, Forests & Climate Change.

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Central Public Works Department (CPWD), State Police Housing Construction Corporations, State Housing Boards, Military establishments and other similar organisations to conduct sensitization programmes on the benefits of sustainable building design practices and evaluation of these through ratings such as GRIHA.

Enlighten us about your partnership with corporate and local government bodies/institutions for green ratings?

GRIHA Rating system was developed by The Energy and Resources Institute (TERI) in association with the Ministry of New and Renewable Energy (MNRE) and

(AAI) has also registered many upcoming terminal buildings for certification.

Many leading developers have entered into agreements with the GRIHA Council committing their upcoming projects to be GRIHA certified. The Government of Andhra Pradesh has also proposed to obtain GRIHA certification for their upcoming building complexes in the new capital township of Amaravati.

India ranks third in 2016 among the Top 10 Countries for LEED green building. Does the definition of Green Building differ from country to country? Kindly share with us the trends, facts, etc of the leading