

The Sustainable Building in India
Profile 2009



Green building buds in India

Indian real estate and architectural firms have begun working on green buildings, in a tiny but rapidly growing segment of the industry that's seen an average 45% growth per annum over the past five years.

One of the country's largest and more progressive architectural firms, *Ratan J Batliboi Architects Private Limited*, has just designed the Convention and Exhibition Centre in Mumbai, due to be completed in 2011, using sustainable principles.

In fact, the firm's focus on the environment is reflected by establishing a separate division called *Educated Environments - EdEn* - to promote environmental awareness and sustainable architecture. The division works closely with designers, architects, urban planners, engineers and landscapers to achieve its sustainability goals.

It is this type of approach to green practices that could well attract more of the big international names in architecture and development, including those who are already providing consultancy and construction skills using sustainable practices and green materials. These are elements that many Indian firms lack, even as the demand for green building gathers traction in a highly robust sector.

From the perspective of setting a local example, inroads in this field are being taken by *Raheja Developers*, among the country's top housing and commercial space developers. It's using environment-friendly technologies in some of its structures, including water harvesting and reuse, solar energy generation, use of non-toxic bio-degradable materials and the use of Compact fluorescent lamp (CFL) light fittings.

Another large construction company, *DLF*, has installed a gas-based power generation system as an integrated part of one of its projects. Waste heat is used for air-conditioning, so saving about 25% of power usage.



CFL lighting growing in use.



Saving outweighs investment in green homes.

The company is planning to switch its street lighting system to CFLs in at least one of the townships it is developing and is expecting to save between 15 and 20 watts per street light. Other green investments include water and sewerage treatment plants, solid waste management, rainwater harvesting and solar-powered street lighting.

It's expected that as the industry realises the long-term savings of costs, more players will be attracted to develop truly green buildings.

However, on the downside, is the fact that government incentives and strong demand for green buildings have led some private property developers to use this concept more as a marketing tool than a sincere means of developing an environmentally-responsible structure.

In such a case would-be investors and joint venture partners should satisfy themselves that the necessary certification is available and materials used are certified by the requisite agencies.

Green shoots rising



Recycled plastic used for building a pontoon.

Green construction accounts for about a third of new projects and the Indian Green Building Council (IGBC) saw the trend starting from 2001.

There are now around 315 green or sustainably-constructed buildings in India, including 250 commercial buildings. Investment in green buildings could touch US\$400 million by 2010.

IGBC, which is a part of CII-Godrej Green Business Centre (GBC), is actively involved in promoting the green building concept in India.

The CII-Sohrabji Godrej Green Business Centre is seen as a centre of excellence, reflecting the efforts of the Confederation of Indian Industry to establish an environment that promotes energy efficiencies, renewable energy and recycling imperatives.

The Centre is a joint initiative with the Andhra Pradesh State Government, with technical support from the US agency, USAID.

The IGBC is among those taking the lead to create a knowledge base and infrastructure to create green building. For example, the IGBC has introduced rating systems for homes and commercial buildings and has also launched an energy, design and leadership rating scale, while also conducting audits to certify enforcement of key criteria.

In another international project, a group comprising New Delhi's Energy And Resources Institute (TERI), Spain's Institut Català d'Energia and the UK's Oxford Institute for Sustainable Development (OISD) aims at generating awareness and creating a knowledge base for sustainable building design, with the environmental benefits.

The group also assists building professionals to identify sustainable solutions to design problems and strengthens the capacity of building practitioners to implement sustainability measures in new and existing buildings.



Rainwater collection is pushed by government.



TERI has designed the Green Rating for Integrated Habitat Assessment (GRIHA), which has been endorsed by the Indian government as its national building rating system. The Institute has also joined hands with *DuPont* to promote green building technologies in the country.

These institutes have also pioneered work on green buildings. The CII-Godrej GBC is the country's first building outside the US to achieve the platinum rating conferred by the US Green Building Council (USGBC). It is also the first building to be rated platinum under version 2 of the Leadership in Energy and Environmental Design (LEED) rating system approved by the USGBC.

TERI complexes in Chennai, South India, and in Gurgaon, North India, have incorporated traditional knowledge with modern technologies to build a sustainable complex, replete with solar energy, rainwater harvesting, energy efficient lighting, waste recycled materials and waste management.



Recycled plastics used on site.



Rainwater harvesting.

Now, municipal corporations are looking at incentives to convert commercial and housing projects for sustainable building construction, aimed at boosting the use of solar energy, in particular conservation of water resources and rainwater harvesting.

Banks such as the State Bank of India offer lower rates of interest and charges on loans taken by developers and owners for building and buying green homes.

Government building construction agencies have included green building materials in their schedules of specifications.

Developing green building materials



Flyash bricks produced locally.

While India is on the way to becoming a genuine green building market, there is still a dearth of building materials needed for these structures.

According to a report from CII-Godrej GBC, green materials such as flyash cement, flyash blocks, recycled aluminium, recycled steel, recycled tiles, low VOC paints, bamboo-based products and HFC-based high efficiency chillers are the kind of materials available, but many important constituents are not.



These include products such as composting toilets, waterless urinals, low VOC adhesives and sealants, certified carpets, certified woods and high albedo roof paints.

The GBC estimates that by 2010, the Indian market for green building materials could be worth around US\$4 billion.

While commercial sector players are slow to develop products and technologies, various government-sponsored agencies have taken the lead to commercialise technologies for green building materials.



Similarly, the Central Building Research Institute (CBRI) is involved in a number of R&D projects for green building materials.

According to S P Agrawal of the Organic Building Materials Division in CBRI: "we have developed some very interesting eco-friendly products using waste generated by the agro, paper, and other industries. We have successfully commercialised some of these products, but transfer of technology to the private sector is a slow process."

Building a water reservoir: commercial demand.

Joining hands with international players

The Indian green construction movement is in a nascent stage, so technical knowledge is not easily available. This is one of the reasons for the importance of international architects and institutes in the Indian market.

For instance, *Bayer MaterialScience's* Innovation Centre near New Delhi was designed by a team of architects at *Banz & Riecks* and others. The building has been planned to adapt to the climate, contrary to the conventional approach of adapting the climate to the building. The result is a building that uses 70% less energy than conventional buildings in the region.



New technologies used for heating.



Use of natural light lowers electricity costs.

Similarly, *HOK*, one of the world's largest architectural firms, has partnered with the *Biomimicry Guild* to incorporate cutting-edge ideas into *HOK's* designs for buildings, towns and cities.

HOK is using this partnership in one of its prestige projects. This involves designing a series of villages in Lavasa, a hill resort near Pune, over an area of 21 million sq ft. The project will concentrate on managing and maintaining water levels while minimising erosion and topsoil loss. The idea is to match the site's ecological performance prior to any construction taking place.

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