Green Building Movement in India

Seminar on Application of Glass in Green Buildings

Hyderabad, 26 June 2012
# Building Sector - Expected Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built-up Area (Billion Sq.ft.)</td>
<td>25</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

(Source – Climate Works Foundation)

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CII – Sohrabji Godrej Green Business Centre, Hyderabad

A unique Public – Private Partnership
( CII, Govt of Andhra Pradesh, USAID and Pirojsha Godrej Foundation )

Centre of “Excellence” for Energy, Environment, Green Buildings, Renewable energy, Water & Climate change activities in India

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IGBC Vision

Vision for 2025

- Enable Sustainable Built-Environment for ALL
- Facilitate India to be one of the world leaders in Sustainable Built-Environment by 2025
Green building registration crosses 1 billion sq.ft

Our Bureau
Pune, March 15

The Indian Green Building Council (IGBC) has achieved a major milestone by crossing one billion sq.ft of registered building area comprising 1,505 projects. Of these, 436 are green home projects (2,596,000 houses) amounting to a built-up area of over 443 million sq. ft, Mr V. Suresh, former CMD, HUDCO & Principal Executive Officer HIRCO, said.

He was speaking at the CII National Conference on Green Homes here. He added that the past 3-5 years had witnessed major growth in Indian building sector and the demand for constructed space is expected to rise from 20 billion sq. ft to 100 billion sq. ft in next 20 years.

The conference also saw the launch of the advanced IGBC Green Homes Rating System (Version 2.0) of CII by Mr Naresh Zurnure, Additional Municipal Commissioner (Gen.) Pune Municipal Corporation. The rating system comes into effect immediately.

In his keynote address, Mr Lalit Kumar Jain, Chairman, IGBC Pune Chapter and President, CREDAI, said that an MoU has been inked between CREDAI and IGBC to strengthen the green building movement in India. "Within the last one week in Pune, over 10 CREDAI members have registered 21 projects over 15 million sq.ft with IGBC,” he said.

The Conference on Green Homes 2012 is organised in partnership with the Ministry of New and Renewable Energy (MNRE), Confederation of Real Estate Developers’ Associations of India (CREDAI), and Indian Institute of Architects (IIA).
Growth of Green Buildings

All types of buildings, all over the country:
Airports, Banks, Colleges, Convention Centres, Factories, Hospitals, Hotels, Institutions, IT Parks, Offices, Residential, Schools, SEZs, Townships...
## Green Building Movement in India

<table>
<thead>
<tr>
<th>S No</th>
<th>Criteria</th>
<th>2001</th>
<th>Till date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CEOs &amp; senior people involved</td>
<td>50</td>
<td>≈ 10,000</td>
</tr>
<tr>
<td>2</td>
<td>No. of professionals trained on Green Building concepts</td>
<td>10</td>
<td>≈ 17,000</td>
</tr>
<tr>
<td>3</td>
<td>No. of registered Green Buildings Built – in Area (sq.ft)</td>
<td>1</td>
<td>1,673</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20k</td>
<td>1.19 Billion</td>
</tr>
<tr>
<td>4</td>
<td>Green Building products &amp; equipment</td>
<td>5</td>
<td>120</td>
</tr>
<tr>
<td>5</td>
<td>IGBC Member Organisations <em>(Founding Members)</em></td>
<td>0</td>
<td>1,262</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>(113)</em></td>
</tr>
<tr>
<td>6</td>
<td>IGBC Local Chapters</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>IGBC Accredited Professionals</td>
<td>0</td>
<td>820</td>
</tr>
</tbody>
</table>
Rating Programmes to Suit Different Building Types

- One single rating cannot be applied to suit all building types

- Programmes launched
  - IGBC Green Homes
  - IGBC Green Factory Buildings (Pilot)
  - IGBC Green SEZs (Pilot)
  - IGBC Green Townships (Pilot)
  - LEED 2011 for India
    - New Construction
    - Core & Shell

- Other Programmes on the anvil
  - IGBC Landscape *

* Rating under development

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Rating programs aligned with:

MoEF
Government of India

BEE
Star Rating Programme

Energy Conservation
Building Codes (ECBC)

National Building Code
of India

Ministry of Environment & Forests
Government of India

Indian Green Building Council
Greenops India since 2001
Key Drivers for Green Buildings

Study by McGraw-Hill Construction

- **Motivation for Green Buildings**
  - **Business reasons**
    - The right thing to do
    - Market and client demands
  - **Social reasons**
    - Encourages sustainable building practices
    - Promotes greater health and well-being
  - **Environmental Reasons**
    - Reduce energy consumption
    - Lower greenhouse gases
    - Indoor air quality

MICROSOFT CAMPUS, Hyderabad
LEED Gold Rated

© Confederation of Indian Industry
Innovative & Emerging Trends
Solar Air-conditioning

- 90 TR hot water fired VAM system
  - 36,000 sq.ft
- Reduction in HVAC electrical load
  - 117 kW

Turbo Energy Limited, Chennai

© Confederation of Indian Industry
Earth Air Tunnels & Passive Cooling

- Office-cum-assembly unit
  - 30,000 sq.ft
- Extension of Geothermal cooling
- Temperature reduction up to 8-10 deg C, possible

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Radiant Cooling Technology

- **IT complex**
  - 160,000 sq.ft
- **30-40% better efficiency**
  - Possible CoP: 8

![Diagram of radiant cooling system](attachment:image.png)

Infosys, SDB-1, Pocharam campus, Hyderabad

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Energy Efficient – Equipment & Systems
The Trend

Past

COP 3-4
100 sq.ft / TR

Present

COP 5-6
450 sq.ft / TR

Future

COP 8-10
700 sq.ft / TR
Controls & Monitoring system

Past
Manual Controls

Present
BMS

Future
Remotely Operated & Monitored

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Net-Positive Energy Buildings

Present
High Performance building

Future
Net Positive ! Export Power
Net-Zero Energy Building

- **Project**: Eco-Commercial Building, Greater Noida
  - 20,000 sq.ft

- **Solar PV Capacity**: 56 kW

- **Energy Demand & Supply**:
  - Requirement: 79,000 kWh/year
  - RE Generation: 89,000 kWh/year
“Green Cities”

Present: Green Buildings

Future: Green Cities
Government & IGBC
Government & IGBC...

- Ministry of Environment and Forests (MoEF) Notification on Green Buildings
  - Faster Environmental Clearance to projects applying for IGBC Green Building Certification
Government & IGBC...

- Additional FAR of 5% for IGBC rated Green Buildings by NOIDA
  - Plot size of 5,000 sq.m and above
  - To achieve a minimum of Gold rating

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Uttar Pradesh Shasan
Audyogik Vikas Anubhag-4

In pursuance of the provisions of clause (3) of Article 348 of the Constitution, the Governor is pleased to order the publication of the following English translation of notification no 2159/77-4-10-284 Bha./91, dated 20 December, 2010

**Notification**
No- 2159/77-4-10-284bha/91

Lucknow : Dated 20 December 2010

(14) The applicant who shall construct Green Building on a plot of 5000 sq.mtrs and above may be allowed an additional FAR of 5% of the permissible/awarded FAR (excluding additional 15% FAR for services), free of cost, provided that the applicant fulfills the following conditions:

(i) The Building is completed and rated by Leadership in energy and Environmental Design (LEED) as ‘Gold or Platinum’.

(ii) The Building is recommended by the Bureau of Energy Efficiency, Government of India for the provision of energy efficiency.

(iii) The Building has been completed fulfilling the parking and landscaping norms of the prevailing regulations.

(iv) The applicant has made sufficient provisions for using the additional FAR.

Note : The applicant has to submit a certificate of compliance of green building from Leadership in energy and Environmental Design (LEED) Bureau, Energy of Efficiency after every three years. In case he fails to submit this certificate the Authority, after giving him one month notice, may charge the compounding fees of the FAR given free of cost at the rate of 200% of the cost of purchasable FAR.

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Green Building Guidelines for Maharashtra

Projects with built-up area more than 20,000 sq.m to get fast track MoEF clearance
Green Building Congress 2012

30 Oct – 01 Nov 2012, Hyderabad
To Sum Up

- Green Buildings
  - Excellent opportunity to reduce operating costs from day one

- Paradigm shift in building design

- Tremendous benefits
  - Tangible & Intangible

"Green makes Business Sense"
‘A Green building creates Delight when you enter, Serenity and health when occupied & Regret while you depart’

– ‘Natural Capitalism’

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Go Green!
Visit www.igbc.in
Need for Green Buildings

- Building & Construction sector – a major contributor to global warming
  - 25 – 40% of global energy consumption
  - 30 – 40% of Global Green House Gas Emissions
  - 30 – 40% of solid waste generation

*Source: UNEP Sustainable Building and Construction Initiative 2006*