Green Cities: Benefits & Opportunities

CII - Indian Green Building Council

3rd Green Building Conference
16 Feb 2017
SPA, New Delhi
CII – Sohrabji Godrej Green Business Centre, Hyderabad, India

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

India’s First Platinum Rated Green Building
Inaugurated by H.E Dr A P J Abdul Kalam

14 July 2004
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Vision of IGBC

Enable sustainable built environment ‘for all’ and facilitate India to be one of the global leaders in sustainable built environment by 2025
Green Building Movement in India

In 2001,
1 Green Building
20,000 sq.ft.

3,958 Green Building Projects,
4.48 Billion sq. ft.

2nd Country in the World with Largest Registered Footprint
## IGBC Green Rating Systems

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<tr>
<th>Commercial</th>
<th>Health &amp; Wellbeing</th>
<th>Industrial</th>
<th>Built Environment</th>
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<td>IGBC Green New Buildings</td>
<td>IGBC Green Healthcare Facilities Rating</td>
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<td>IGBC Green Existing Buildings</td>
<td>IGBC Wellbeing Rating*</td>
<td>IGBC Green SEZ</td>
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<td>IGBC Green Interiors</td>
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<td>IGBC Green Campus</td>
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<td>Residential</td>
<td>Education</td>
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<td>IGBC Green Homes</td>
<td>IGBC Green Schools</td>
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<td>IGBC Green Residential Society</td>
<td>IGBC Green Affordable Housing *</td>
<td>IGBC Green Existing Metros</td>
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<td>IGBC Green Railway Stations</td>
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* Under Development
Green Building Statistics of India

- **Green Building Footprint**
  - 3,958 projects (4,480 Million sq.ft)

- 1,600+ Green Homes
- 250+ Green Factories
- 1,600+ Green Offices
- 45+ Green Townships
- 1 Green City
- 8 Green Villages

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## Benefits in IGBC Green Buildings

<table>
<thead>
<tr>
<th>Environmental Benefit Category</th>
<th>Average Benefits /Million Sq.ft</th>
</tr>
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<tbody>
<tr>
<td>CO₂ reduction</td>
<td>12,000 – 15,000 Tons</td>
</tr>
<tr>
<td>Energy savings</td>
<td>13,000 - 15,000 MWh</td>
</tr>
<tr>
<td>Water savings</td>
<td>43,000 - 45,000 KL</td>
</tr>
<tr>
<td>Construction waste diverted from landfills</td>
<td>400-450 Tons</td>
</tr>
</tbody>
</table>
- **Land mass**
  - 3.28 Million Sq.km

- **More than 58% Solar hotspot area**
  - More than 5kWh/m²/day of annual average Global isolation

- **Enormous opportunity**
  - 1 Crore MW potential

- **0.23% of land mass**

Seek renewable energy for our entire global enterprise.
IGBC has facilitated installation of 10 MW of Renewable Energy
Intangible Benefits

- Environmental benefits
  - Reduce impact on the environment

- Health and Safety benefits
  - Enhance occupant comfort

- Improve Productivity of occupants

World Class Standards & Procedures
Green Buildings for Green Cities

Green Cities = Green Buildings!!
# Building Sector - Expected Growth

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

- Construction in the next 20 years >> past 100 years
- Enormous Opportunity!

(*Source – Climate Works Foundation)
Urban Growth - India

Indian context

30% of our current population live in urban areas
(Source: Ministry of Urban Affairs)

Townships and Cities will increasingly grow

- 70 new cities by 2020 with population > 500,000
  (Source: Census of India, Goldman Sachs Economic Research, 2010)

- 200 - 300 new townships expected in the next 3-5 years

Wonderful opportunities in Making our Cities GREEN

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Challenges due to Increasing Urbanisation

- Lack of Infrastructure
- Depletion of Natural Resources
- Health impacts
- Longer commuting time
- Housing shortages
- Increasing pollution levels
Approach to Green Cities

New cities to be designed as Green from day one

Convert existing cities to Green cities

Green Cities

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Benefits of Green Cities

- Efficient Land-use
- Reduced infrastructure requirement
- Smart (well planned) growth
  - Mixed use development
- Cleaner environment
  - Less or no pollution
- Reduced automobile dependence
- Better Economy

Ultimately a better quality of life
With increasing urbanisation there is a need to create green cities and townships
Several excellent National & international examples exist for greening cities & townships
IGBC Green Cities Rating

India’s First Rating System for Green Cities
IGBC Green Cities Rating

- Prepared under chairmanship of Mr. V Suresh, Former CMD, HUDCO

- Other Key Committee Members
  - IL&FS, GIFT City, AECOM, CIDCO...
Framework of Green Cities

- **C-1**: Vision, Policy, Plan, DCR
- **C-2**: The Metabolism
- **C-3**: Quality of Life
- **C-4**: Compliance, Impact Management through Innovation
- **C-5**: Enabling Framework
- **C-6**: Monitoring, Reporting and Corrective Actions

**Inputs:**
- Water, Energy, Materials

**Infrastructure:**
- Housing, Transportation, Education, Storm Water Collection, Treatment Systems, Early Warning Systems

**Outputs:**
- Waste, Water, Air Emissions, GHG Emissions

**Air Quality, Drinking Water Quality, Open Spaces, Health & Safety, Noise, Walkability, Biodiversity, Employment, Income**


**Governance, Stakeholder Involvement, Finance, PPP, Institutional Capacity (trained professional)**

**Acknowledgement:** Dr Prasad Modak, Chief Sustainability Officer, IL&FS

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IGBC’s Perspectives

Top 10 features of a Green City

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1. Preserve Water Bodies

- Conserve & maintain all existing lakes, wet lands, forest cover & water bodies
  - Bangalore has lost 75 lakes past 25 years
2. ‘Zero’ Solid Waste City

- Solid waste management at the Home / community level
- National / International Example
  - San Francisco
    - 80% of waste recycled or composted
    - Target for Zero waste city

Segregation at source

Automatic Collection, Transportation and Segregation System
GIFT City, Gandhinagar
3. Water Management

- **Invest on 100% Waste Water Treatment & Reuse**

- **National / International Example**
  - 80% waste water treated in Israel – Highest in the World
  
- Purple Lines

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**Israel**: Purple lines to convey treated water

**Singapore**: 100% Treated, 100% Reused

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Mobility

WALK

BIKE

POOL

MOVE

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4. Mass Transit Oriented Development

- Plan for BRTS/ Mono rail / Light rail / Metro rail or combination of above from day ‘one’

- National / International Example
  - Singapore Metro
    - Average daily ridership 2.75 million i.e., 40% trips by Metro
  - Bogota BRTS
    - Average daily ridership 1.65 million
5. Walkable & Bikeable City

- **Bicycling lanes to promote cycling and reduce dependency on fossil fuel**

  - **Amsterdam – Bicycle Friendly City**
    - 60% of trips made by bicycle
    - 400 Kms of Bicycle lanes

  - **Copenhagen**
    - 41% cycle
    - Reduction in GHG and Healthier people
    - CO2 – Neutral Capital by 2025!
Walkable & Bikeable City

- **Nanded, Maharashtra**
  - Motor vehicle lanes to accommodate all users
  - Separate bicycle lanes
  - Pedestrian lanes

(Source: Nanded Waghala Municipal Corporation, JNNURM, 2010)
6. Minimum Energy Efficiency

- By regulation, 100% of buildings to be designed as energy efficient buildings

**GIFT City**: City’s vision to have 100% Green Buildings, State-of-the-art Green City Infrastructure already in place
7. Renewable Energy

- More than 15% of total electricity demand of city to be catered by Renewable energy
  - Encourage Net-metering system

- National / International Example
  - Germany – 27% electricity demand met by renewable systems
  - Target for 2050 – 80% from renewable systems

Wind farm in Germany
8. Design for 33% Green Cover

- Develop Public Landscape Area of at least 9 Sq.m per person
  - As per WHO standards
  - Hong Kong – 1,100 Sq.km area

- 50% Green area

- Dedicate space for Urban Agriculture to promote local food production
  - MWC – 76 Acres for local agriculture
  - (40 sq.m of land per dwelling unit)
9. Barrier Free Accessibility

- By design, all public spaces in the city should be designed for 100% barrier free accessibility

- National / International Examples
  - Berlin
    - 100% barrier-free environment by 2020
10. Health & Well-being of Citizens

- Ambient air quality to meet National Standards
- Every person to have access to parks within a walking distance of 500m
- National / International Example
  - Singapore 2030 Vision
    - 85% of people to live within 10-15 minutes walk of a park

Open air gym, Nehru Park

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India’s First IGBC Platinum Green City

Dholera City: Sustainable Approach towards Evolution of a Low Carbon City
About 30,000 Acres of Land development
Over 570 Million Sq.ft. of Built-up area being developed as
‘IGBC Green Townships’
First Green Airport under IGBC Green Existing Buildings

Mumbai International Airport Limited - Terminal 2

IGBC Platinum Rated Green Existing Building

Certified Gold in 2014 under IGBC’s New Construction

Re-Certified Platinum in 2016 under IGBC’s Existing Building Rating

This project has scored Platinum rating with highest points (94 points) till date under IGBC Existing Building Rating System
First Metro Rail in India to Go Green

Delhi Metro Rail Corporation

240+ Metro Stations across the country are going green with IGBC
First Bus Terminal in India to Go Green

Vadodara Central Bus Station
IGBC GOLD (IGBC Existing Building Rating)
India’s First
IGBC Platinum
Green Village

Village: Mawlynnong
District: East Khasi Hills
State: Meghalaya

Won the title of ‘Asia’s cleanest village’ (2003)

All Three Generations are Equally Committed
Feedback Infra Pvt. Ltd. has adopted Bhond village as a CSR Initiative (2015 – 2017: Implementation)

Received Swarn Jayanthi Swachhata Award on Independence Day 2016

As a pilot project, 8 pilot Green Villages have been rated in 8 States
Launch of IGBC Green Railway Stations (Draft Pilot Version)

Launch of IGBC Green Railway Stations Rating (Draft Pilot Version)
by Mr Suresh Prabhu, Honble Minister of Railways, Government of India at IGBC’s Green Building Congress 2016 on 8 October

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To Sum Up

❖ Green Cities

- Green buildings for Green cities
- Tremendous opportunity to adopt IGBC Green Rating Systems
  - Tangible & intangible benefits
- Tradition & Technology - co-exist

❖ Tremendous Benefits

- Reduced infrastructure costs
- Individual
- Society
- Nation

Ultimately, resulting in a better quality of life
"The best way to predict the future is to design it"

Buckminster Fuller
Go Green . . .

www.igbc.in