

Green Buildings in India

The World Bank

14 March 2007



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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**

Formal launch of CII-Godrej GBC



23, March 2000 Hyderabad

President of India Inaugurates CII-Godrej GBC



14 July 2004, Hyderabad

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Vision of CII – Godrej GBC



**India should become one of the leaders
in Green Businesses (Environment) by 2015**

CII's Strategy for Achieving Global Leadership Status

❖ Focus Areas that will be addressed

- Energy Efficiency
- Renewable energy
- Environment & Recycling
- Water Management
- Green Buildings

❖ Create Sector-wise leadership

- Cement
- Power plants
- Pulp & Paper



Strategy : Create 'Islands of Excellence' & Expand

Structure of CII-Godrej GBC Advisory Board

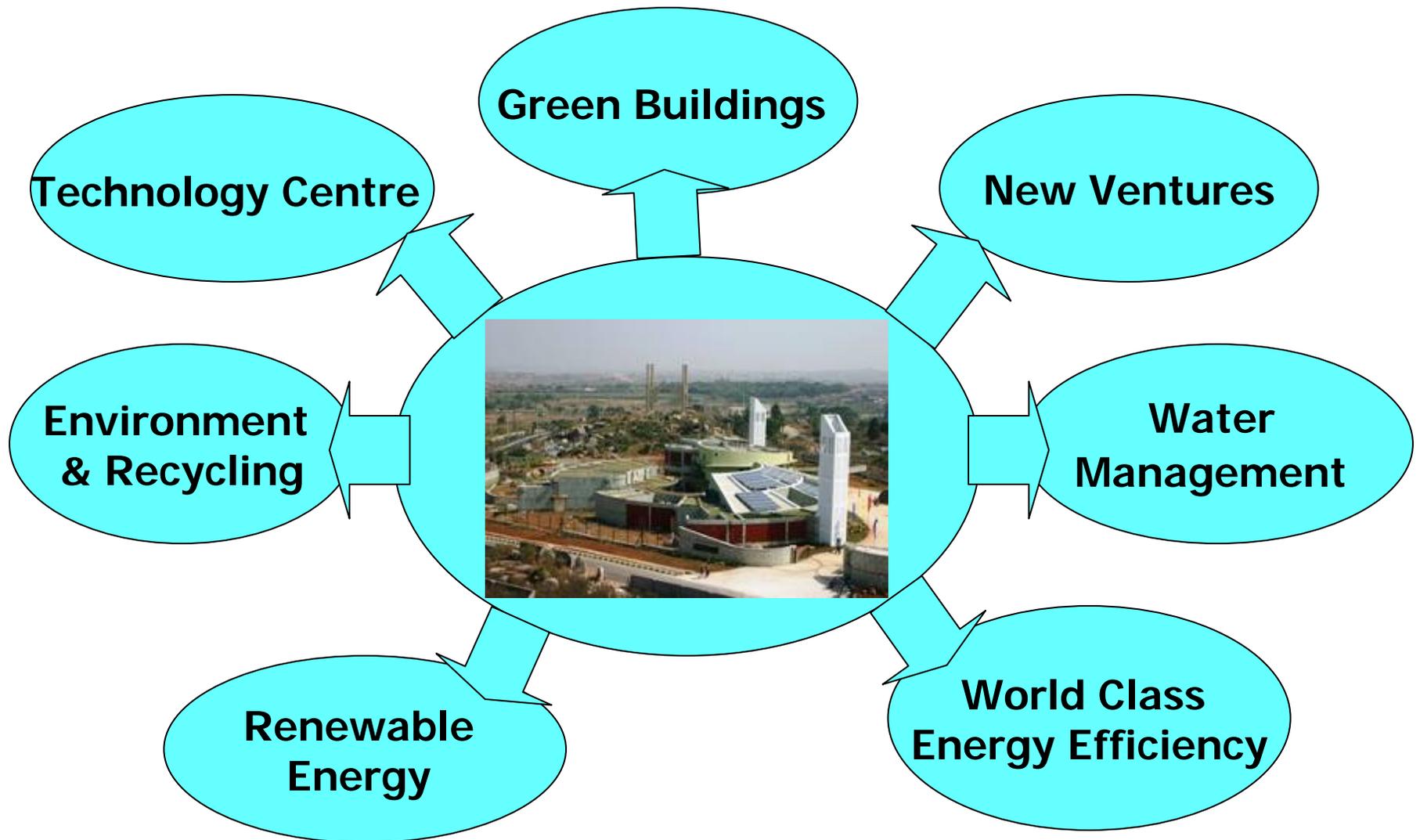
**Mr Jamshyd N Godrej
Chairman**



Advisory Board



Focus areas of CII-Godrej GBC



Platinum Building

A concept to reality



CI I-Godrej GBC, Hyderabad

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Challenges Faced in 2000-03



Is Platinum Possible & Realistic?

The Inspiration

The First Platinum Building



Chesapeake Bay Foundation, Annapolis, USA

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The reality

- ❖ A saga of more than 3 years
- ❖ Announcement of Platinum

➤ Sep 2003

A dream come true



Select Green Building Features at CII-Godrej GBC



One of the Greenest Buildings in the World !!!



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CII-Godrej GBC Building - Select features

- ❖ Zero water discharge
 - 100% waste water recycling
- ❖ 55% reduction in energy consumption (Over base model)
- ❖ 100% Day lighting
- ❖ Eco-friendly A/C plant
 - Non-CFC (HCFC, HFC) & High EER
- ❖ 20% Power - Solar PV
- ❖ 60% recycled materials
- ❖ Roof garden - 60% area
- ❖ No toxic paint and sealant
- ❖ Low VOC carpets
- ❖ Wind tower
- ❖ Minimum site disturbance



Green Building Movement

- ❖ **First “Green” Building in India**
 - **First “Platinum” rated building outside US**
 - **First Platinum building in the World under LEED version 2.0**



CII – Godrej GBC building – The demonstration for India, achieved 56 points out of 59 points attempted



Green Building Movement in India

- ❖ **Flagged off in Dec 2000**
 - **Decision of the Advisory Board to build CII – Godrej GBC as a platinum rated building**
- ❖ **Green Building Congress August 2001**
 - **First such event in the country**
- ❖ **Formal launch of IGBC in Aug 2001**
 - **125 stakeholders**



**Jamshyd N Godrej, Chairman
CII – Sohrabji Godrej Green Business Centre
receiving the LEED Platinum award**



Awareness Level in India

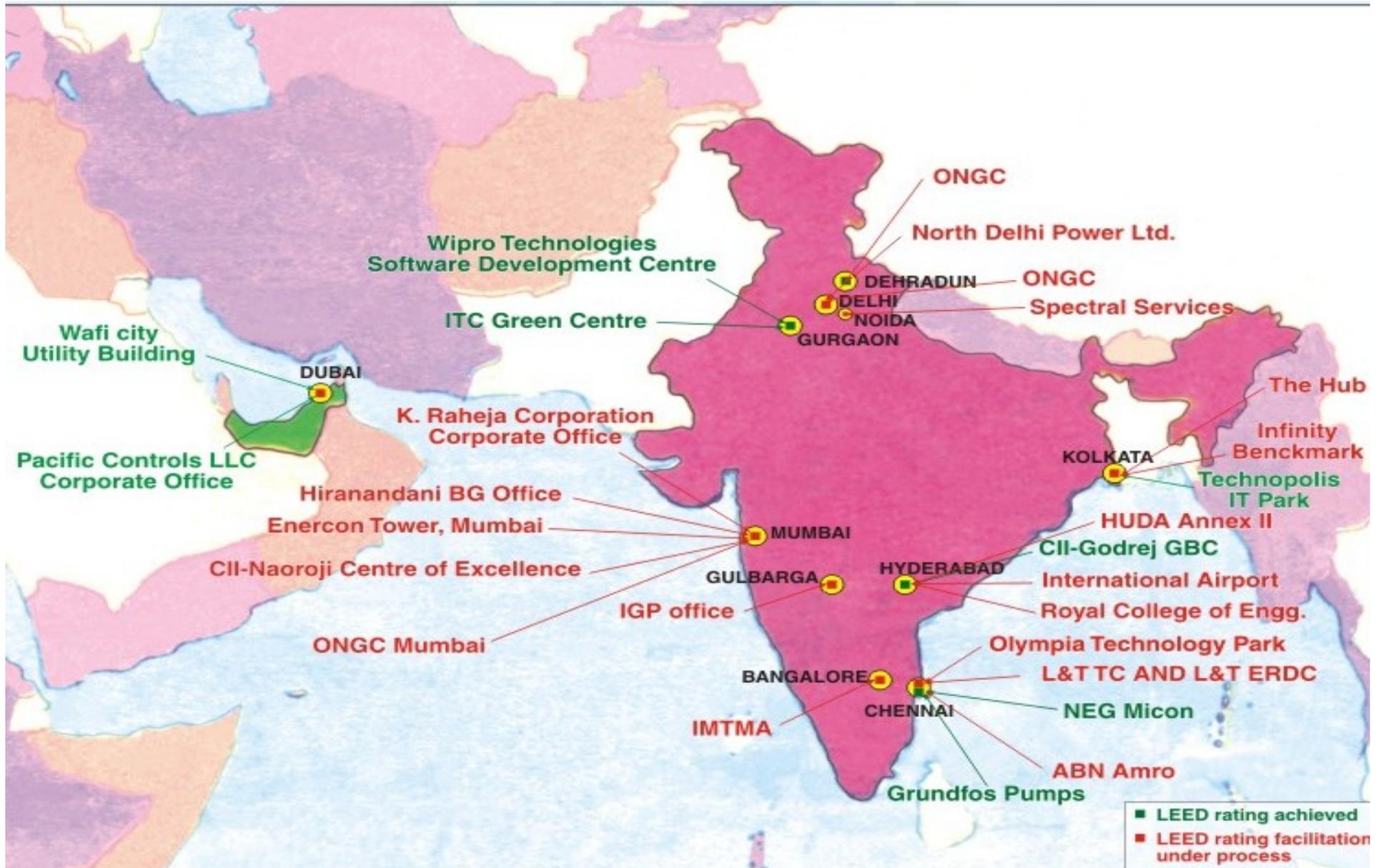
Before 2001	Present
LEED - a county in UK	Popular green building rating system
Focus: Energy and Water efficiency	Holistic approach
Recycled content ❖ Negative connotation	Recycled content ❖ Now mentioned in manufacturers' brochures eg., India Gypsum
Initial cost – Major criteria in selection	Life cycle cost analysis (<i>Simulation software</i>)



The Green Building Movement - Over the Years

No	Criteria	2001		2006
1	CEOs & senior people involved	50		≈ 2000
2	No. of professionals trained on LEED rating	10		≈ 950
3	No. of registered Green Buildings	1		40
4	Built – in Area (sq.ft)	0		10 Million
5	Green Building products	5		25

Green Buildings Facilitated



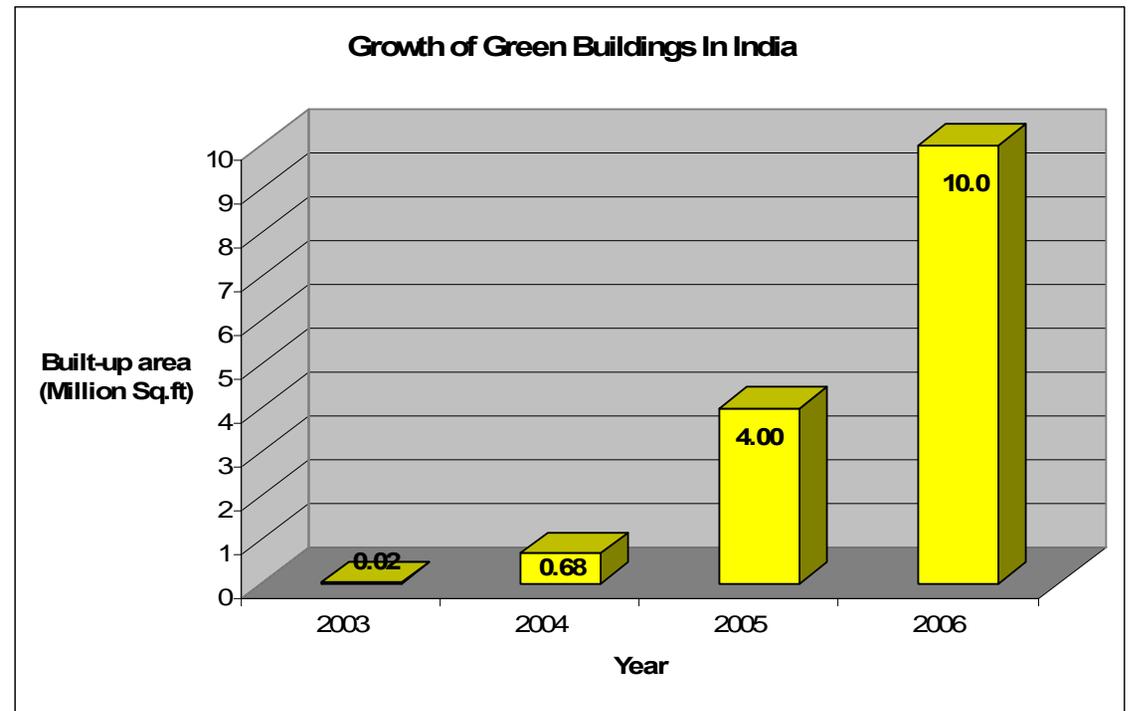
Green Buildings in India

❖ Projects registered for LEED Green Building Rating

- 10 Million Sq. ft. registered by 2006 end

❖ Varieties of buildings coming up :

- IT Parks
- Offices
- Banks
- Airport
- Convention centre
- Educational institution
- Hotel



Emerging Green Building Types

- ❖ LEED - NC
- ❖ LEED - EB
- ❖ LEED - CS
(Core & Shell)
- ❖ LEED - CI
(Commercial Interiors)



ITC Green Centre, Gurgaon



Olympia Tech Park, Chennai



Technopolis, Kolkata



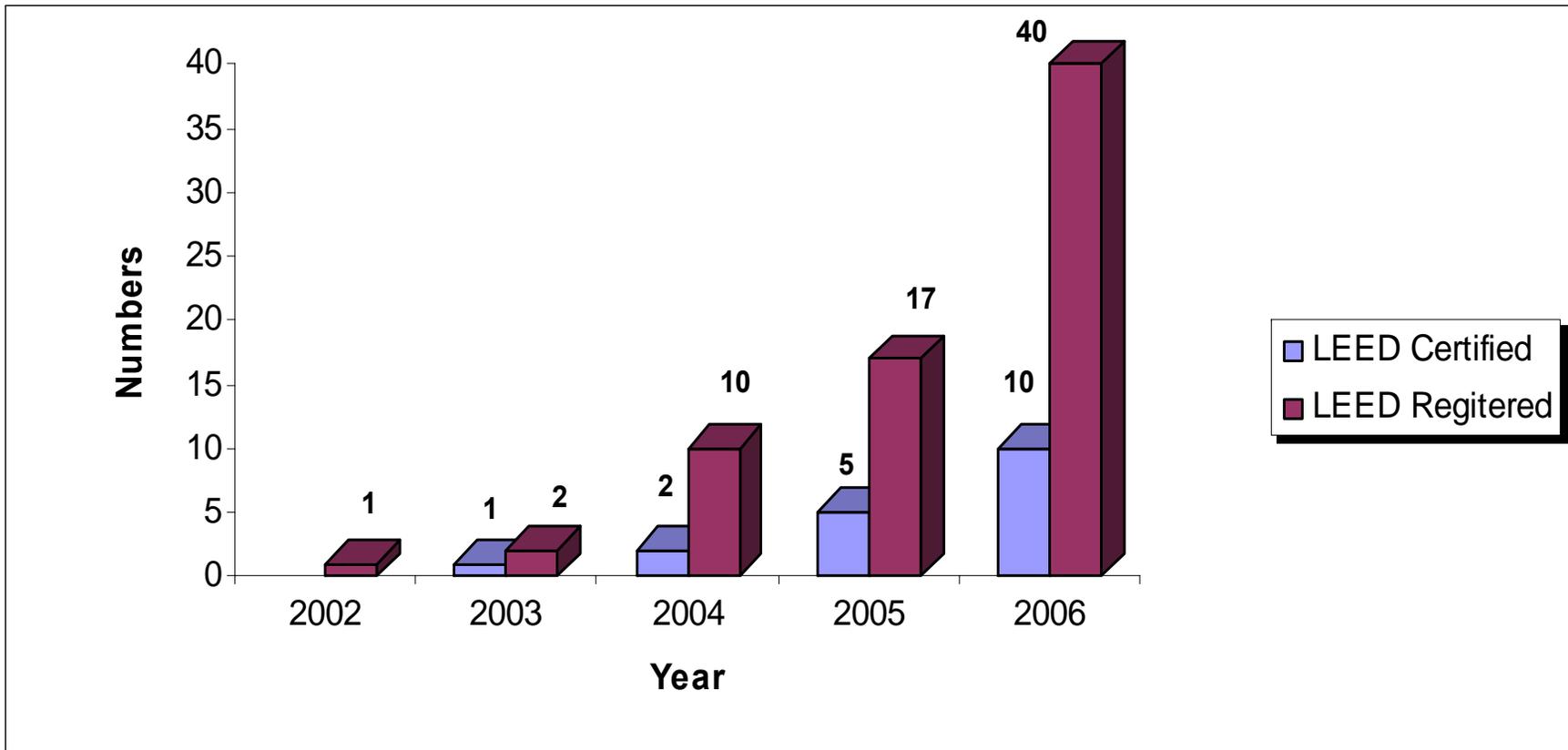
Projected Growth of Green Buildings in India

Year	Projected Certified Green Buildings (Nos. per year)	Estimated Market Potential INR Million (USD Million)
2006	20	4000 (80)
2007	50	10000 (200)
2008	100	20000 (400)
2012	1000	200000 (4000)

Opportunity for Green Building Materials & products (Rated Green buildings & other buildings) by 2012 : 1500 Billion INR (USD 30 Billion / year)



Growth of Green Buildings in India (Registered for LEED rating)



Total area registered : 10 Million sq.ft (Cumulative)



Why Stakeholders Prefer Green Buildings

- ❖ Green Image
- ❖ Operational savings
- ❖ Above all... a sense of pride & achievement



CII-Godrej GBC



ITC Green Centre



Benefits Experienced

❖ Tangible

- Energy upto 50%
- Water upto 35%

❖ Intangible

- People spend 90% of their time inside building
 - ❑ Productivity improvements upto 10% possible
 - ☑ Day-lighting
 - ☑ Views
 - ☑ Air quality (CO2 monitoring)



What Facilitated the Change

- ❖ **Indian Green Building Council**
 - **Involvement of all stakeholders**
 - ❑ **Industry, Architects, Builders, Manufacturers, Govt. representatives, Institutions, etc.,**
- ❖ **First 5 Icon Buildings**
 - **CII – Godrej GBC**
 - **ITC Green Centre**
 - **Wipro technologies**
 - **Grundfos Pumps**
 - **NEG - Micon**
- ❖ **Green Building Congress**
 - **Facilitated Awareness & Change in Perceptions**



Dr. APJ Abdul Kalam: India's No.1 Citizen at Green Building Congress 2005



**Smt. Sheila Dikshit
Hon'ble Chief Minister of Delhi**



Perception # 1

Green Buildings are Costly

Building	Sq.ft	Rating	Year of Completion	Incremental cost	Typical Payback
CII-Godrej GBC	20,000	Platinum (56 points)	2003	20 %	7 years
ITC Green Centre, Gurgaon	1,70,000	Platinum (52 points)	2004	15 %	6 years
Wipro, Gurgaon	1,75,000	Platinum (57 Points)	2005	8 %	5 years
Grundfos Pumps, Chennai	40,000	Gold (42 Points)	2005	6 %	3 years

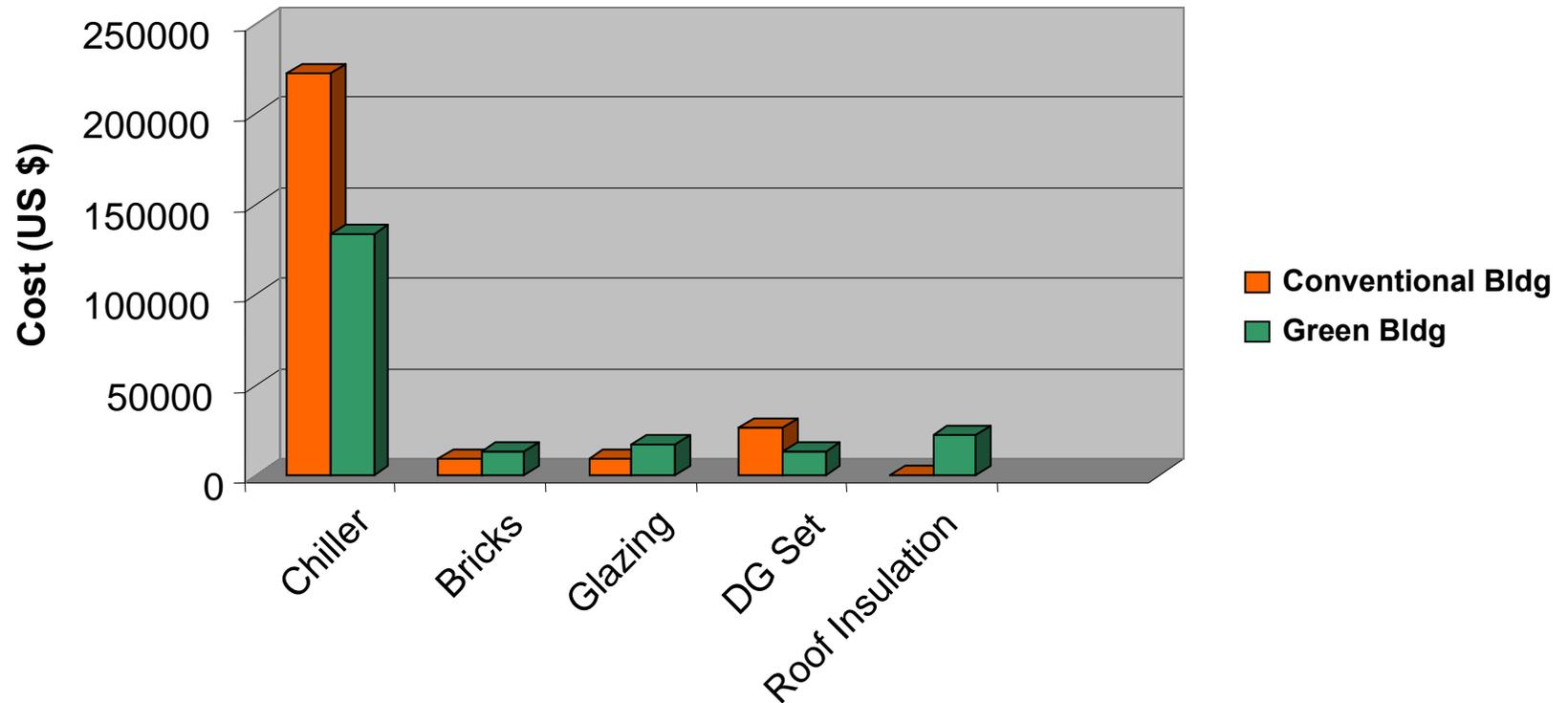
Showing a Decreasing trend

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CII – Godrej GBC

Cost Comparison – energy related equipment & materials



Incremental cost vis-à-vis Conventional building (excluding Solar PV) : Rs. 3.0 mill

Annual savings in energy cost : Rs. 0.8 mill

Payback Period : 4 years



Perception # 2

Green Buildings require Air-Conditioning

❖ Reality

- Non air-conditioned building can also be a Green Building
- Suited for Indian buildings
 - Eg., IGP Office at Gulbarga
 - Wind Tower cooling
 - LIC office, Shimoga
 - Hyderabad Institute of Management & Technology, Hyderabad



IGP Office Complex, Gulbarga



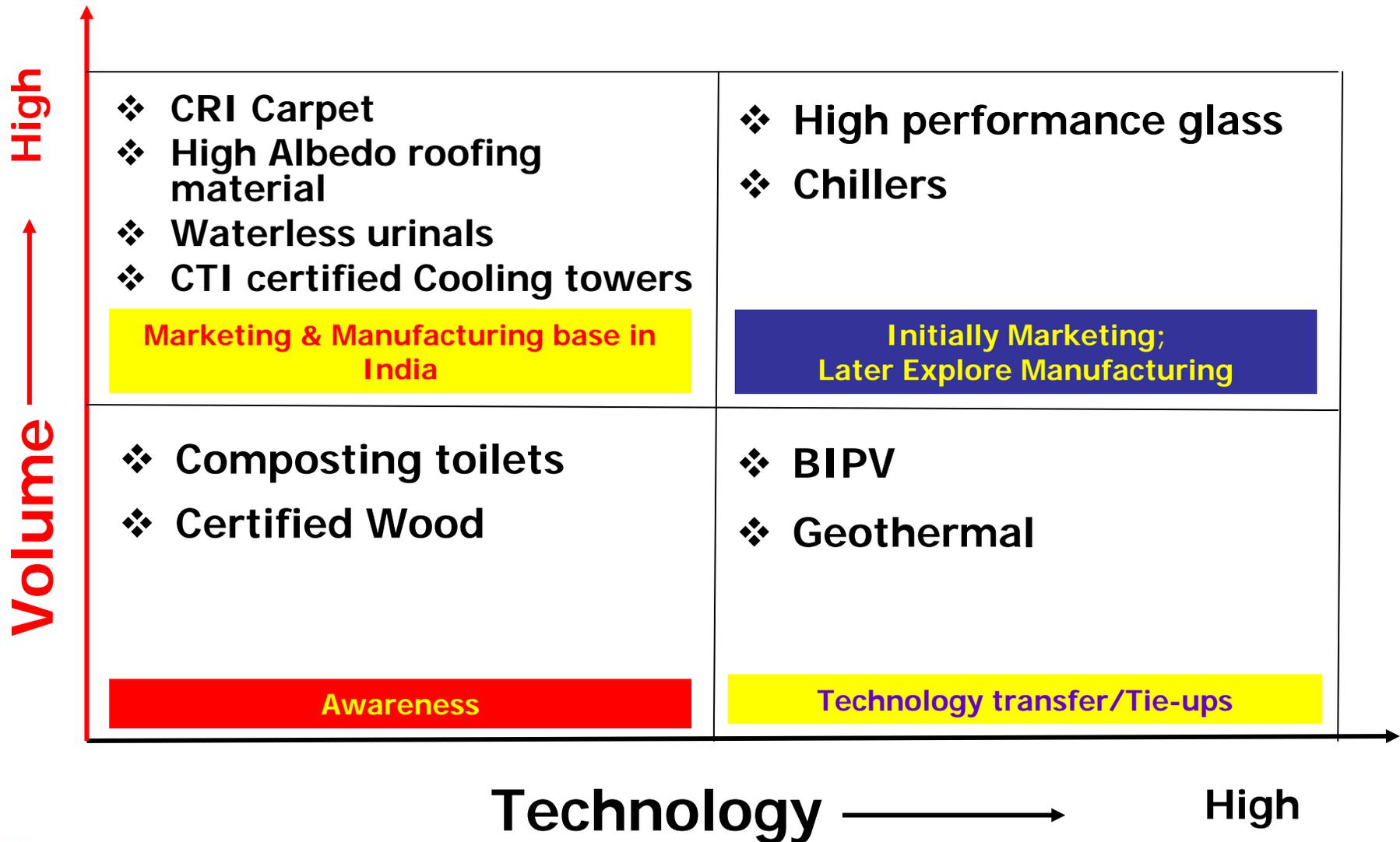
Perception # 3

Green Materials Not Available

Issues	Possible Solution
<ul style="list-style-type: none">❖ Green materials are not readily available<ul style="list-style-type: none">➤ Certified wood➤ Waterless urinals➤ High albedo materials➤ High recycled content materials➤ High performance glass➤ Low VOC materials❖ Testing and certification facilities not Available<ul style="list-style-type: none">➤ Eg., Cooling towers, Chillers	<ul style="list-style-type: none">❖ Solutions sought<ul style="list-style-type: none">➤ Incubation of Green Building materials➤ Display in GBC Technology Centre❖ Type testing for equipment❖ Green Building materials Meet❖ Green Building Congress



Technology vs Volume*



* List is illustrative



Opportunities

- ❖ Huge opportunity to the Nation
- ❖ Catalyse new business opportunities
 - **INR 200 Billion for rated green buildings by 2012**
 - **Green Building Materials & products**



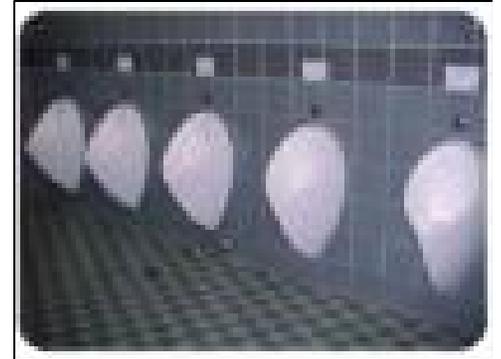
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Few Success Stories in India

❖ Waterless urinals

- 2001 – Awareness Nil
- 2005 – Three major players (EID Parry, Hindware, Falcon have the major market share)



❖ High Albedo material

- Unheard in 2001
- Two major players established
 - Thermoshield
 - SPI Coatings



Other Opportunities

❖ Emerging New Services

- Energy & Lighting Simulation
(Rs. 1 billion) – USD 23 Millions
- Commissioning authority
(Rs. 1 billion) – USD 23 Millions
- LEED Advisory services
(Rs. 1.20 billion) – USD 27 Million



❖ Creation of New Employment opportunities

Professionals required in thousands in next 3 years



Indian Green Building Council

- ❖ **India (IGBC) -Founding Member of WGBC**
- ❖ **USGBC – our Major partner**
 - **LEED India rating system launched**
 - **Certification to start by 2007**
- ❖ **Issue to be addressed**
 - **Capacity Building of architects**
 - **Availability & markets for Green Products**

Ultimate Goal

- ❖ 1000 Green Building by end 2012
- ❖ 10000 committed building professionals on Green Buildings in India by end 2012
- ❖ Green Building Concepts should be part and parcel of building construction
- ❖ Tap 4000 Million USD potential on Green Buildings by 2012
- ❖ Develop LEED India as robust green building rating system
- ❖ Green Buildings should cost 4 to 5% less vis-à-vis conventional buildings

**Facilitate India to become a world leader in
"Green" Buildings by 2012**



World Class Energy efficiency – Cement & Power plants

- ❖ Working closely with select Cement Plants & Power plants in making them 'World Class'
 - International Missions
 - Inter-plant visits
 - Energy Studies & Training
- ❖ Green Cementech & Power Plant Summit – Yearly events
 - Leading forum for information dissemination & networking
 - Bring latest 'breakthroughs' & technologies to Indian industry
 - Identify best technological options for future plants

Perfect match with APP objectives

Indian Business Alliance on Water (IBAW)

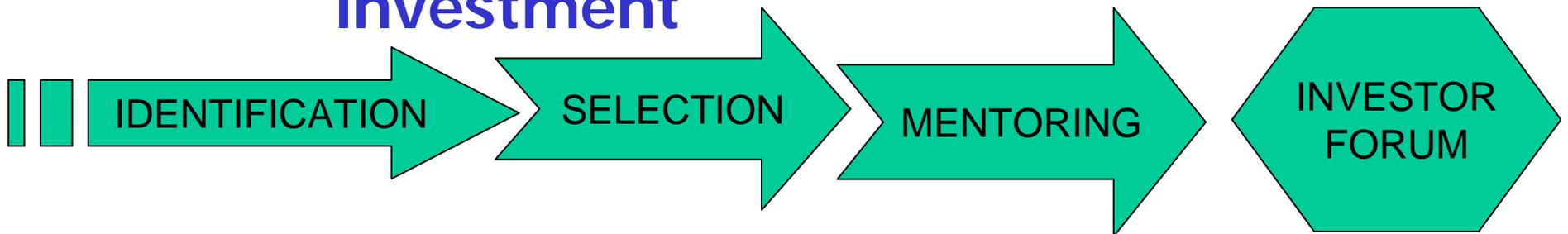
- ❖ Partnered by WEF & CII
- ❖ Key Objectives are
 - Facilitating water conservation models with public-private-community partnerships
- ❖ Rajasthan community business

USAID and UNDP are supporting the IBAW initiatives

New Ventures India

❖ Alliance between CII, WRI & USAID for “Green” Businesses

- New Ventures selects and mentors promising small, environmental businesses seeking between US\$1,00,000 and \$ 5 million in investment



Fostering relationship with Investors, Entrepreneurs,
Industry, Institutions, & Media

Renewable Energy Council Activities - Goals

- ❖ To facilitate corporate investments in Green Power sector
- ❖ Facilitate Renewable Energy Legislation in India
- ❖ To establish Green Power Market Development Group in India (GPMDG)
 - Model to facilitate more investment in RE sector
- ❖ To launch Green – e certification for Renewable Energy products

Mission on Sustainable Growth

❖ New initiative launched by CII

- Improve resource efficiency

- Reduce resource intensity

- Reduce emissions and discharge

- Aims to Champion a proactive Green movement by industry leaders

CII Code for Ecologically Sustainable Growth

❖ Objectives

- **Involve top management**
- **Seek voluntary commitments & self targets from member companies**
- **Partner and work together, in realizing the objectives of MSG**

❖ Target

- **Seek voluntary commitments from 500 CEO's by Mar 2008**

Goals of CII-Godrej GBC

1. Reach out to 1000 CEOs committed to Green movement
2. Mission on Sustainable Growth (2012)
3. Incubation of Green Businesses
4. India to have 1000 certified **Green buildings** by 2012
5. 5 **World class energy efficient** companies by 2008
6. Market transformation of Green Products through NV India
7. Establish E-based Waste exchange by 2007
8. Establish recycling industry by 2008
9. India to emerge as world leader in RES by 2010
10. Facilitate Government of Andhra Pradesh to establish **Green Industrial Park**





Go Green . . .