



Confederation of Indian Industry



Indian Green Building Council

Greening India since 2001

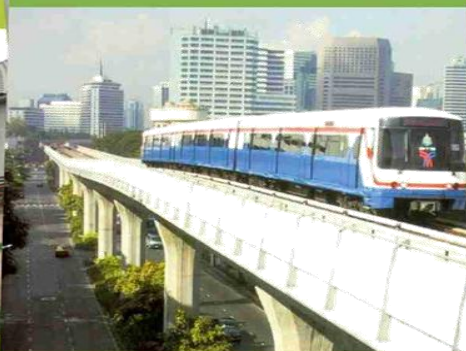
Green Cities: Benefits & Opportunities

CII - Indian Green Building Council

3rd Green Building Conference

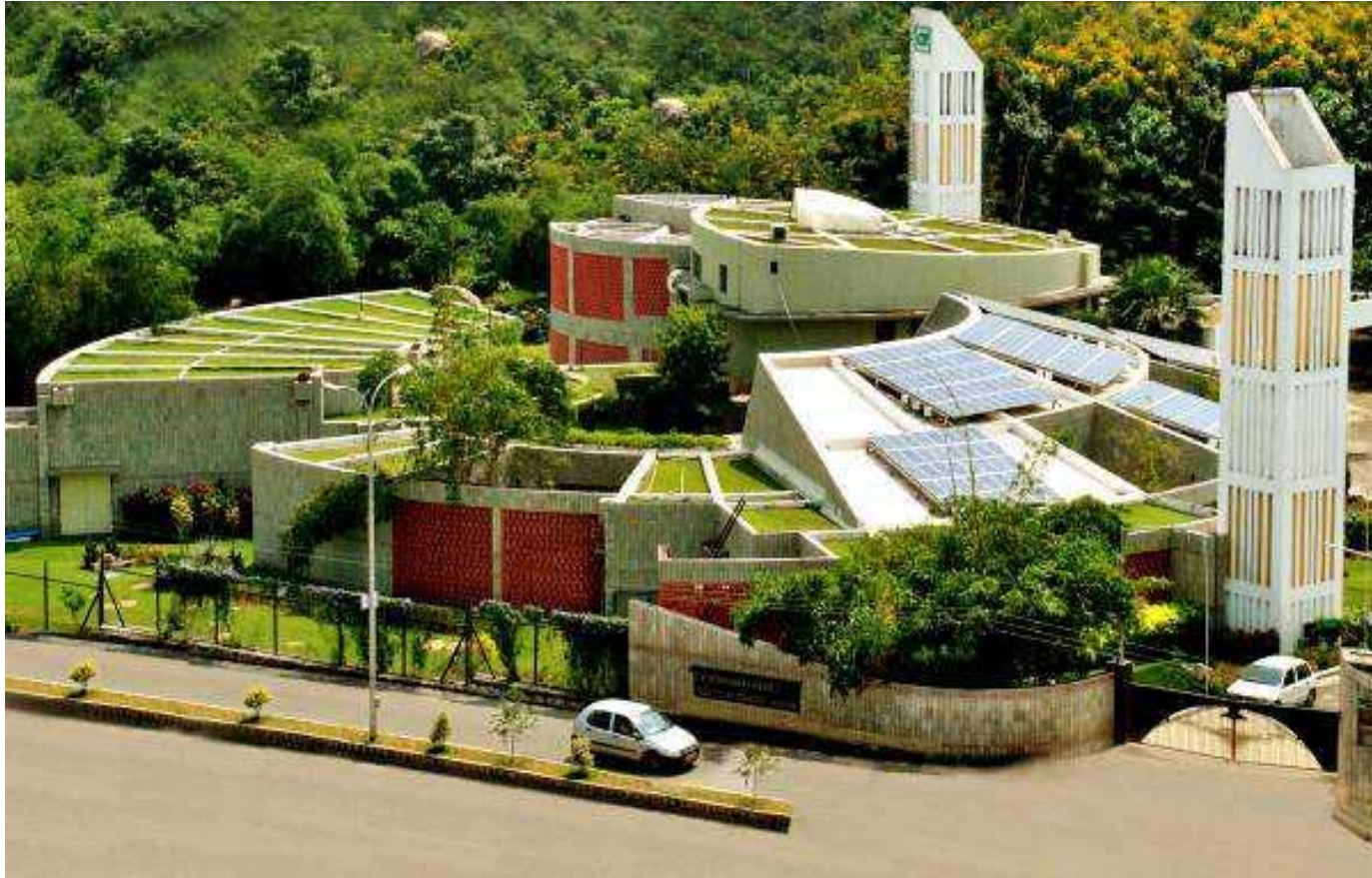
16 Feb 2017

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

CII-Sohrabji Godrej Green Business Centre Hyderabad



Inaugurated by H.E Dr A P J Abdul Kalam

14 July 2004

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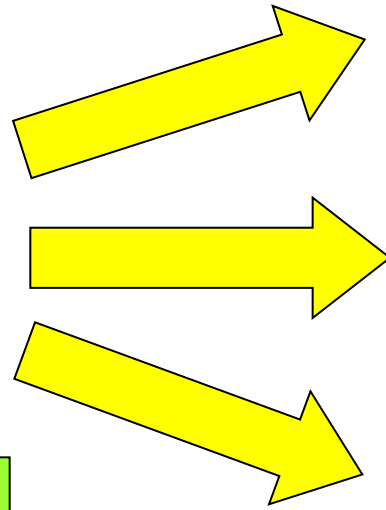
Vision of IGBC



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

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



**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

Commercial	Health & Wellbeing	Industrial	Built Environment
<p>IGBC Green New Buildings</p> <p>IGBC Green Existing Buildings</p> <p>IGBC Green Interiors</p> <p>IGBC Green Campus</p> <p>IGBC Green Data Centres</p>	<p>IGBC Green Healthcare Facilities Rating</p> <p>IGBC Wellbeing Rating*</p>	<p>IGBC Green Factories</p> <p>IGBC Green SEZ</p>	<p>IGBC Green Cities</p> <p>IGBC Green Villages</p> <p>IGBC Green Township</p> <p>IGBC Green Landscape</p>
	Residential	Education	Transit
	<p>IGBC Green Homes</p> <p>IGBC Green Residential Society</p> <p>IGBC Green Affordable Housing *</p>	<p>IGBC Green Schools</p>	<p>IGBC Green Metro Stations</p> <p>IGBC Green Existing Metros</p> <p>IGBC Green Railway Stations</p>

** 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

Environmental Benefit Category	Average Benefits /Million Sq.ft
CO₂ reduction	12,000 – 15,000 Tons
Energy savings	13,000 - 15,000 MWh
Water savings	43,000 - 45,000 KL
Construction waste diverted from landfills	400-450 Tons

❖ Land mass

➤ **3.28 Million Sq.km**

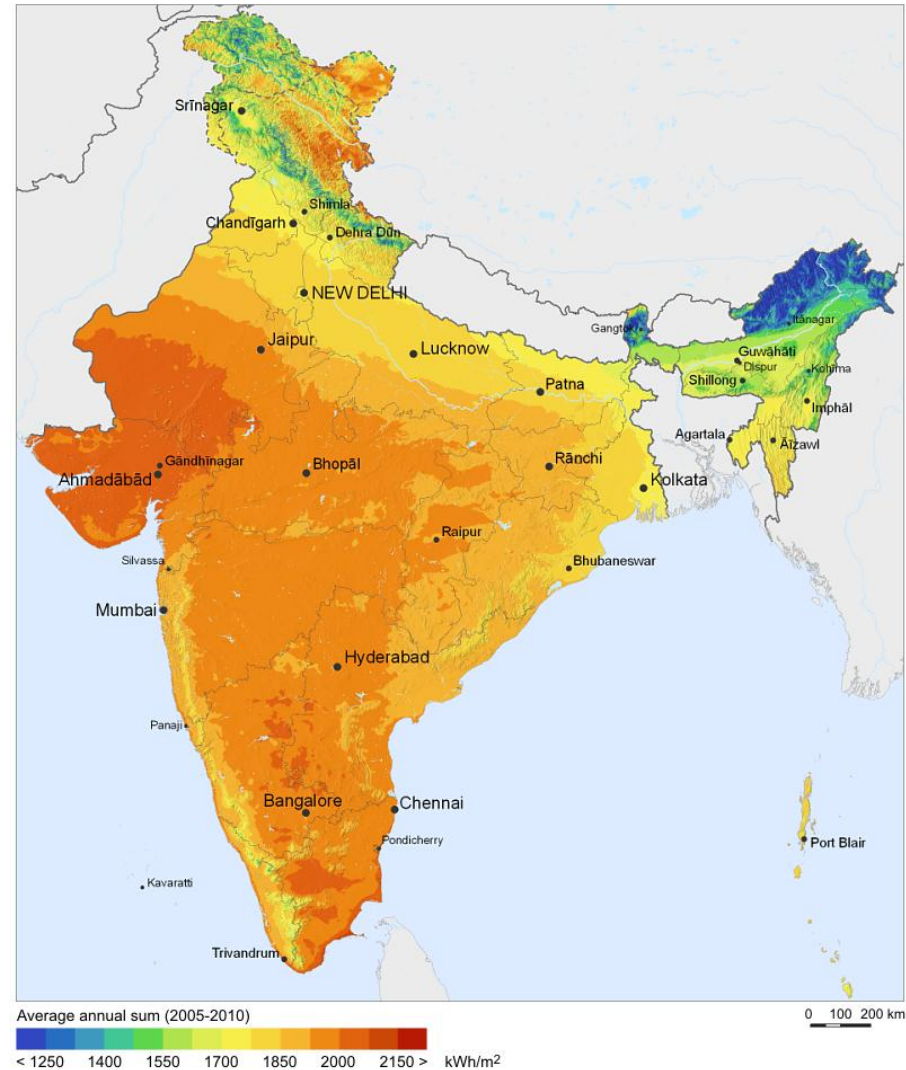
❖ More than 58% Solar hotspot area

➤ **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

Upcycle



Tangible Benefits - Renewable Energy



**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



Manipal University, Jaipur

IGBC Gold



Evolve – The GnNxt IT Park (B2 Building)

IGBC Platinum

World Class Standards & Procedures



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Green Buildings for Green Cities



Green Cities = Green Buildings!!

Building Sector - Expected Growth

Year*	2012	2020	2030
Built-up Area* (Billion Sq.ft.)	25	50	100

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



Urban Growth - India

❖ Indian context

- **30% of our current population live in urban areas**

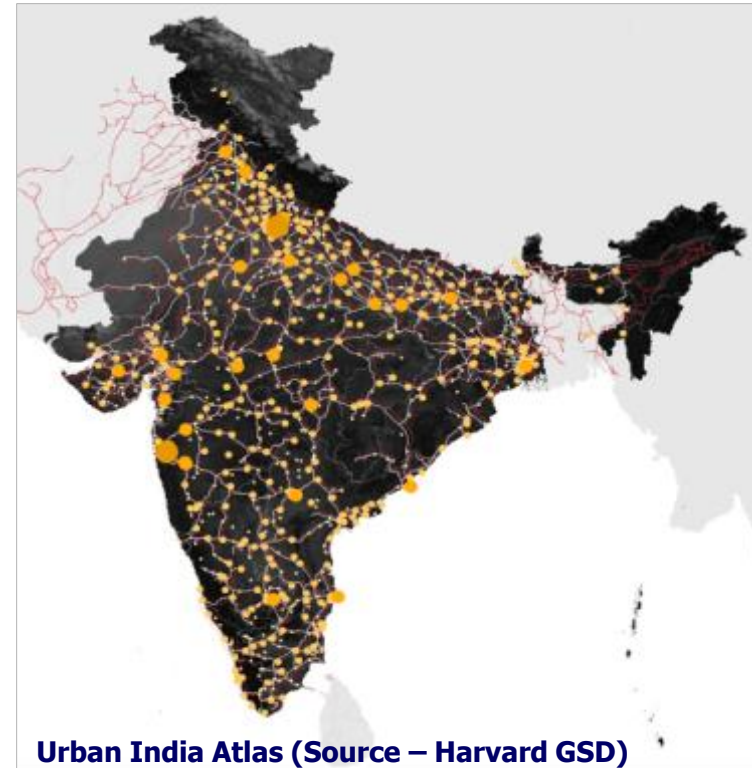
(Source: Ministry of Urban Affairs)

- **Townships and Cities will increasingly grow**

- ❑ **70 new cities by 2020 with population > 500,000**

(Source: Census of India, Goldman Sachs Economic Research, 2010)

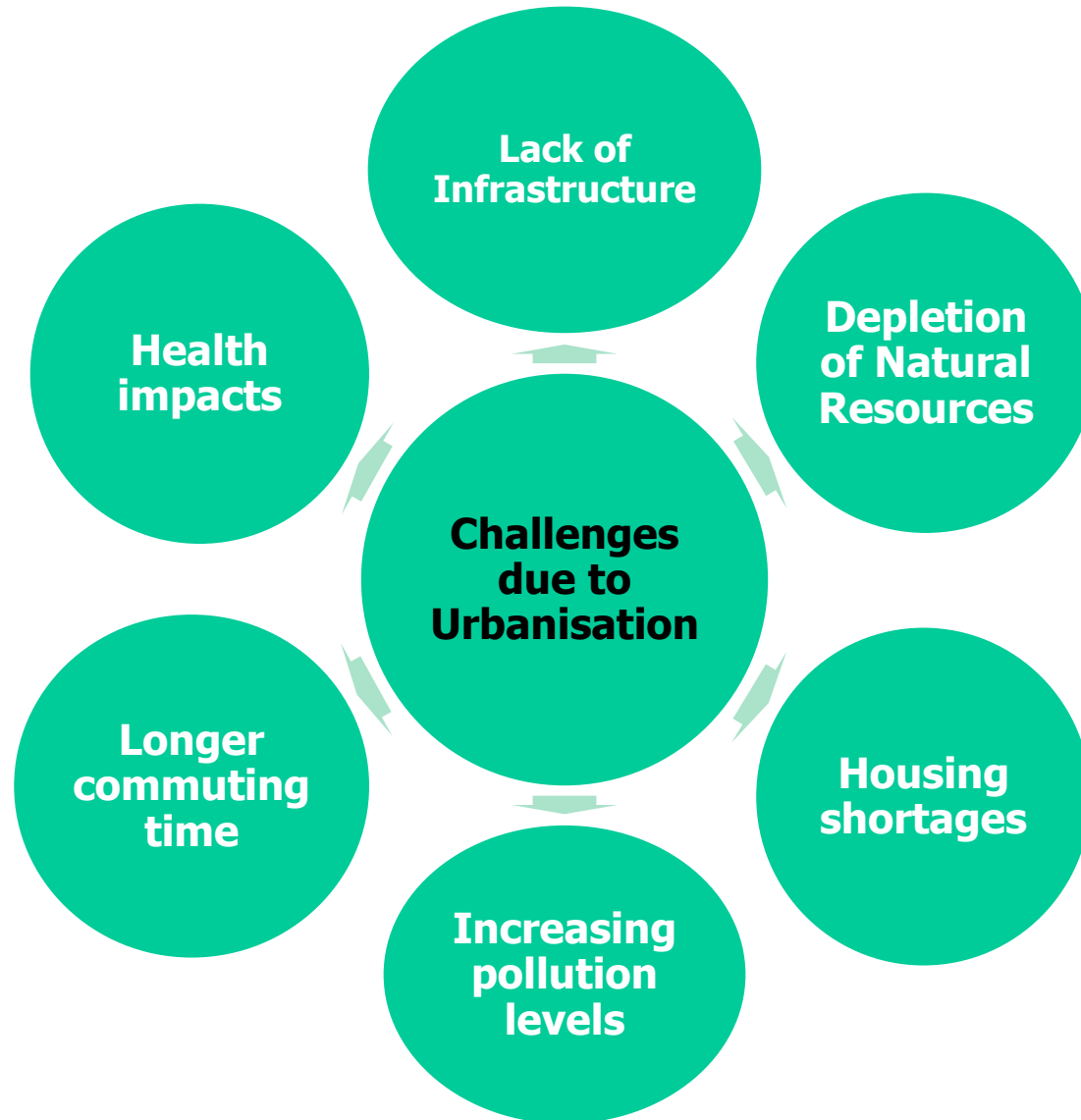
- ❑ **200 - 300 new townships expected in the next 3-5 years**



**Wonderful opportunities in Making our Cities
GREEN**



Challenges due to Increasing Urbanisation



Approach to Green Cities

New cities to be designed as Green from day one

Convert existing cities to Green cities



Green Cities

© Confederation of Indian Industry

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**

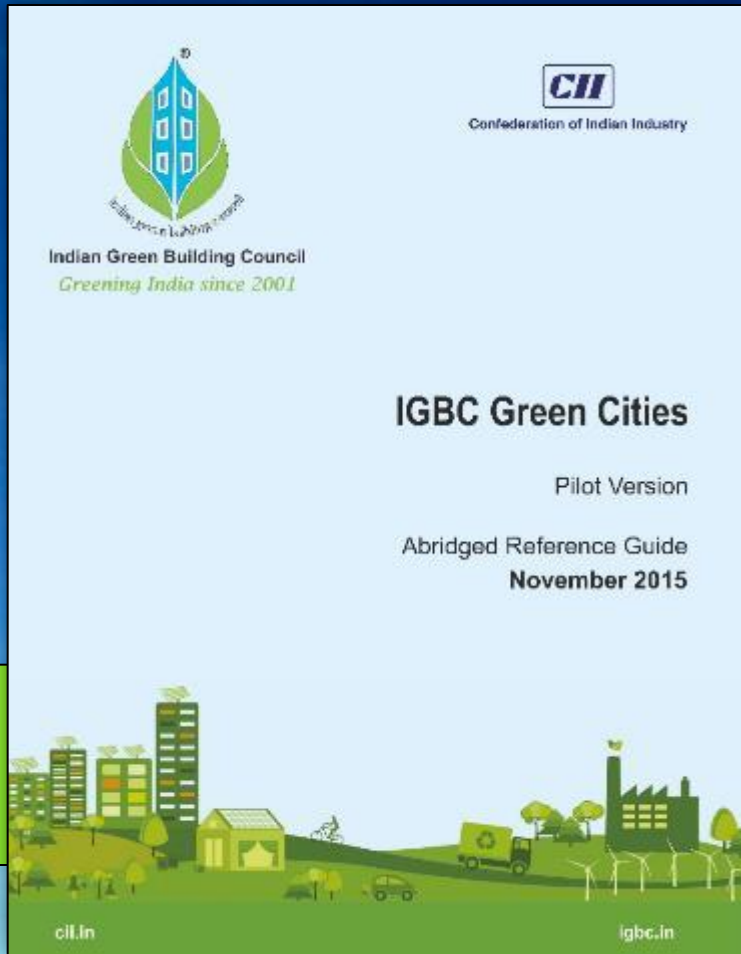


Ultimately a better quality of life



- ❖ **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**



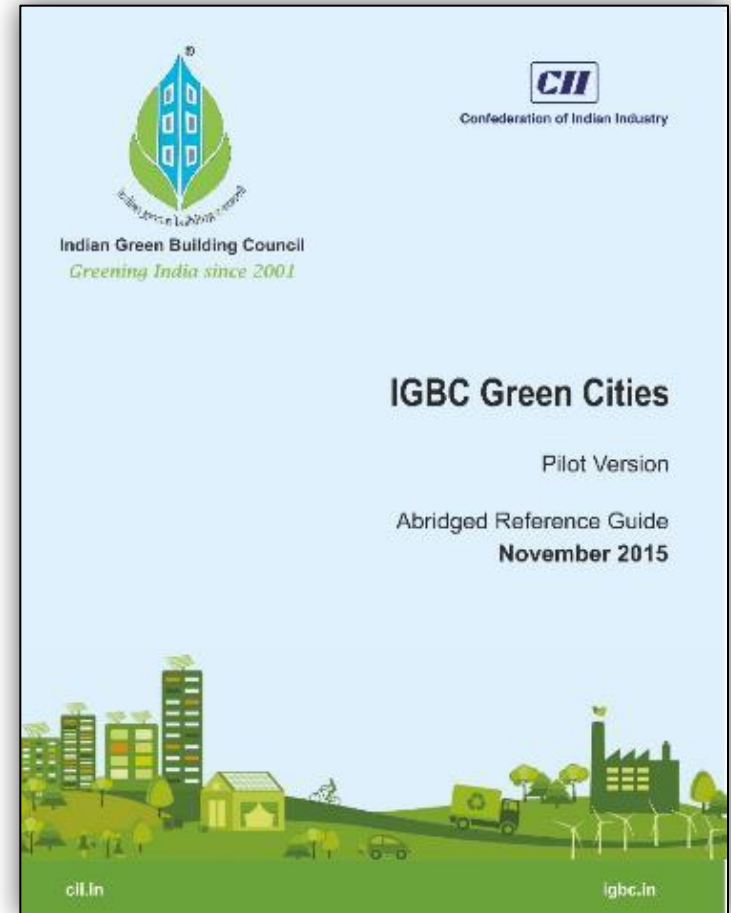
IGBC Green Cities Rating

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

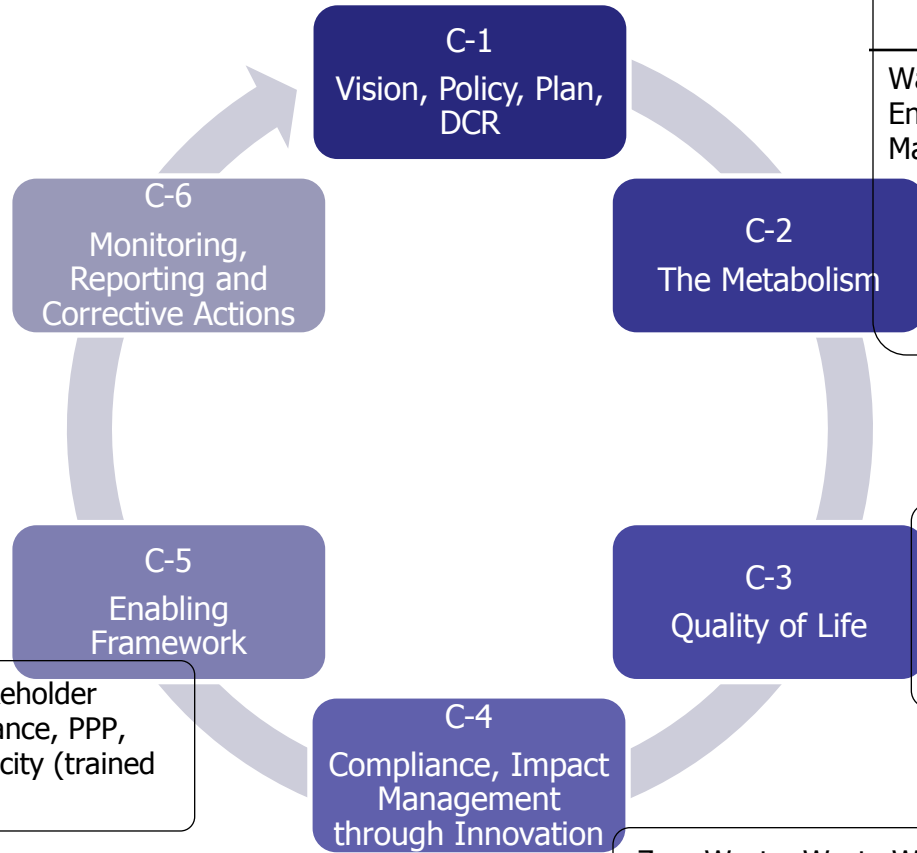
&

❖ Other Key Committee
Members

➤ **IL&FS, GIFT City, AECOM,
CIDCO . . .**



Framework of Green Cities



Inputs:	Infrastructure:	Outputs:
Water, Energy, Materials	Housing, Transportation, Education, Storm Water Collection, Treatment Systems, Early Warning Systems	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)

Zero Waste, Waste Water Recycling, Clean Fuels, Green Roofs, Solar Heating, Smart Interventions, Green Buildings

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

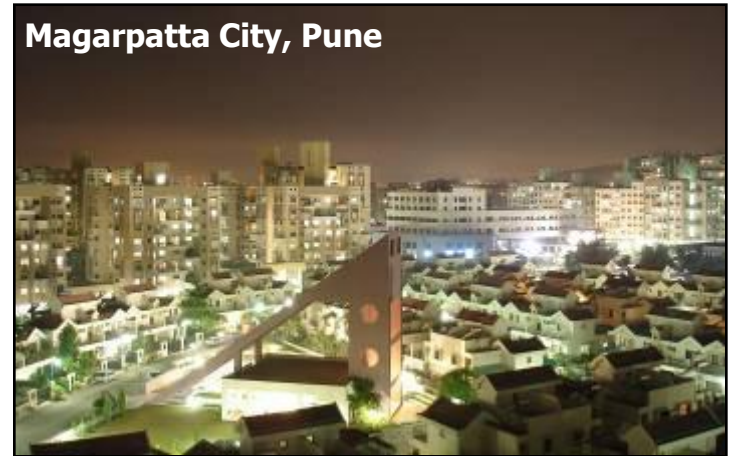
- ❖ **Conserve & maintain all existing lakes, wet lands, forest cover & water bodies**

- **Bangalore has lost 75 lakes past 25 years**

Restored Kolavai Lake by MWC, Chennai



Magarpatta City, Pune



2. 'Zero' Solid Waste City

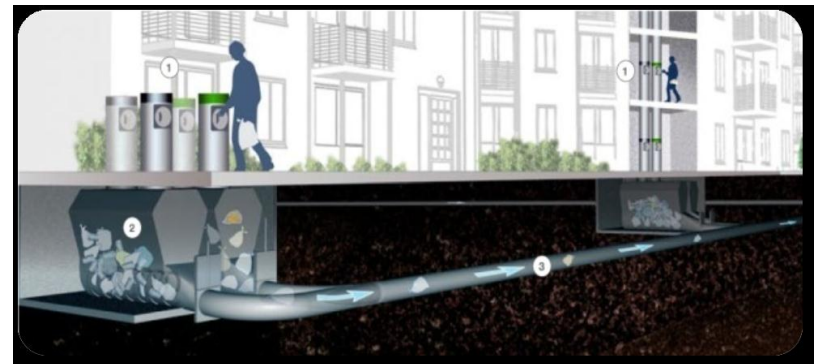
- ❖ Solid waste management at the Home / community level
- ❖ National / International Example



Segregation at source

- **San Francisco**

- ❑ 80% of waste recycled or composted
- ❑ Target for Zero waste city



Automatic Collection, Transportation and Segregation System
GIFT City, Gandhinagar



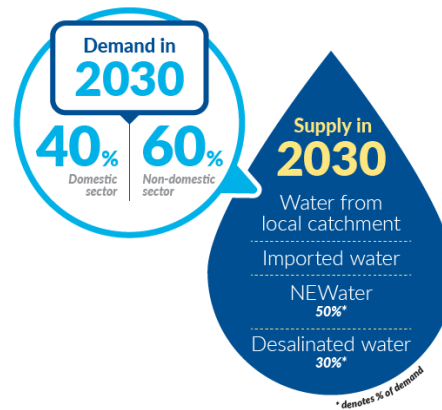
3. Water Management

- ❖ Invest on 100% Waste Water Treatment & Reuse
- ❖ National / International Example
 - 80% waste water treated in Israel – Highest in the World

❑ Purple Lines



Israel : Purple lines to convey treated water



Singapore : 100% Treated, 100% Reused

Mobility

WALK



BIKE



POOL



MOVE



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**



Singapore Metro



Bogota BRTS

5. Walkable & Bikeable City

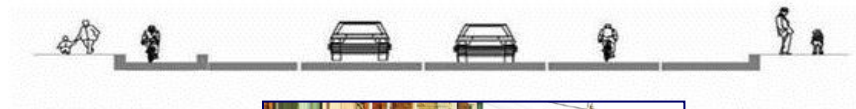
❖ **Bicycling lanes to promote cycling and reduce dependency on fossil fuel**

➤ **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!

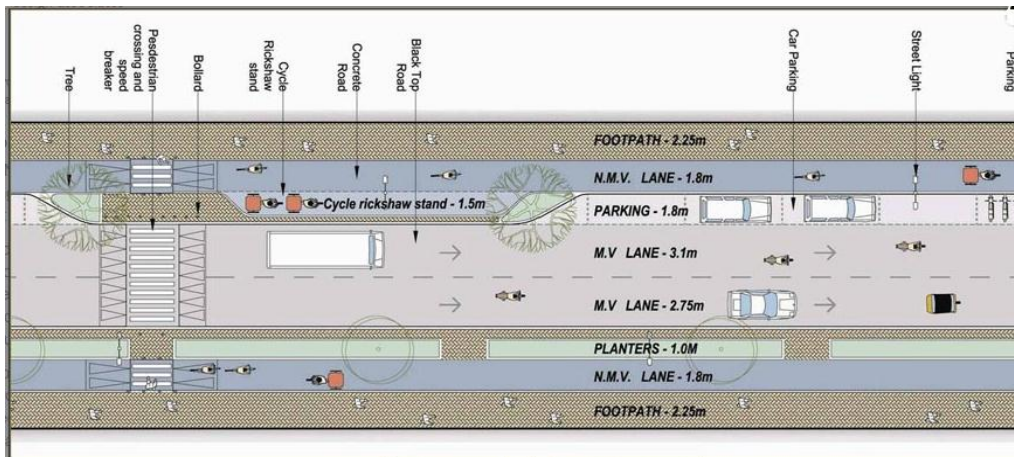


Walkable & Bikeable City

➤ Nanded , Maharashtra

- q Motor vehicle lanes to accommodate all users
- q Separate bicycle lanes
- q Pedestrian lanes

(Source : Nanded Waghala Municipal Corporation, JNNURM, 2010)



Nanded , Maharashtra

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)



National Park, Singapore



Roof top Food production

Courtesy: Biome



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





India's First IGBC Platinum Green City



Dholera City : Sustainable Approach towards Evolution of a Low Carbon City



Mahindra World City Chennai – India's 1st IGBC Gold Certified Township



PPP between Mahindra
Group and TIDCO
(89 : 11)

Spread over 1500
acres

3
Sector Specific
SEZs and a DTA

60+
Industrial
customers

Master Planned by
JTC Singapore, HoK
USA and Belt Collins

285
acres of Residential,
Social & Retail
Infrastructure

Increasing footprint
of **Social**
infrastructure

Surrounded by
1000 acres of
reserve forest and
7 water bodies

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)**





VILLAGE : **M**AWLYNNONG
DISTRICT : **E**AST KHASI HILLS
STATE : **M**EGHALAYA

Won the title of 'Asia's cleanest village' (2003)

India's First IGBC Platinum Green Village



Kid



Young



Old

All Three Generations are Equally Committed



**Bhond,
Mewat (Nuh), Haryana**

IGBC Gold Rated Green Village

India's First Certified Green Village under CSR Initiative

**Feedback Infra Pvt. Ltd.
has adopted Bhond village
as a CSR Initiative
(2015 – 2017: Implementation)**



**Received Swarn Jayanthi
Swachhta 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**

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

Live



Learn



Work



Shop



"The best way to predict the future is to design it"
Buckminster Fuller

Play



Travel





Go Green . . .

www.igbc.in