GREEN BUILDINGS
GREEN CITIES
GREEN PEOPLE
GREEN BUILDINGS
GREEN BY NATURE
ALLIANCE FRANCAISE, AHMEDABAD, INDIA
Alliance Française, Ahmedabad
1973
CENTRE FOR DEVELOPMENT STUDIES AND ACTIVITIES, PUNE, INDIA
GREEN BUILDINGS
GREEN BY SCIENCE
KOCHI REFINERIES LIMITED HEADQUARTERS, KOCHI
SAMUNDRA INSTITUTE OF MARITIME STUDIES, LONAVLA, INDIA
FORBES MARSHALL FACTORY, PUNE, INDIA
PASSIVE DOWNDRAFT EVAPORATIVE COOLING (PDEC) SYSTEM
The design of the typical laboratory block was evolved jointly by Abhikram and Short & Ford Associates (SFA) with Brian Ford of SFA, contributing to all the scientific and simulative aspects of the design, Nimish Patel & Gautam Patel of Abhikram contributing to the aspects covering the architectural design, the materials and technologies, construction detailing, internal and external finishes as well as the final built-form, and Dr. C.L. Gupta, of Solar Agni International, Pondicherry, vetting all the designs.
THE SIGNIFICANT CONSEQUENCES OF PDEC SYSTEM

• 200 Metric Tonnes of Air-conditioning load saved.

• Summers’ Temperatures remain at 28°- 32°C.

• 6 to 9 Air changes/hour in Summer, including in a chemical laboratory.

• The Temperature fluctuations inside, 3°- 4 °C, in any 24 hour period, when outside variations are 14°- 17° C.

• Humidity 65 - 70% in summer and Air Movement Velocity, 1.5 feet / second.

• The building designed for 175 occupants in 1997, accommodated more than 600 users in 2005
GREEN BUILDINGS
GREEN BY NUMBERS
<table>
<thead>
<tr>
<th>Sections</th>
<th>Criterion No.</th>
<th>Criterion Name</th>
<th>Max. Points</th>
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<tbody>
<tr>
<td>Site Planning</td>
<td>1</td>
<td>Site Selection</td>
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<tr>
<td></td>
<td>2</td>
<td>Low-impact design</td>
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<tr>
<td></td>
<td>3</td>
<td>Design to mitigate UHIE</td>
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<td>4</td>
<td>Site Imperviousness Factor</td>
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<td>Construction Management</td>
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<td>Air and water pollution control</td>
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<tr>
<td></td>
<td>6</td>
<td>Preserve and protect landscape during construction</td>
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<tr>
<td></td>
<td>7</td>
<td>Construction Management Practices</td>
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<td>8</td>
<td>Energy efficiency</td>
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<td>Renewable energy utilization</td>
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<td>Zero ODP materials</td>
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<tr>
<td>Occupant Comfort and Well Being</td>
<td>11</td>
<td>Achieving indoor comfort requirements (visual/thermal/acoustic)</td>
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<tr>
<td></td>
<td>12</td>
<td>Maintaining good IAQ</td>
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<tr>
<td></td>
<td>13</td>
<td>Use of low-VOC paints and other compounds in building interiors</td>
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<tr>
<td></td>
<td>14</td>
<td>Use of low-flow fixtures and systems</td>
<td>4</td>
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<tr>
<td></td>
<td>15</td>
<td>Reducing landscape water demand</td>
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<td>Water</td>
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<td>Water Quality</td>
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<td>17</td>
<td>On-site water reuse</td>
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<td>Rainwater Recharge</td>
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<td>Sustainable Building Materials</td>
<td>19</td>
<td>Utilization of BIS recommended waste materials in building structure</td>
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<td>20</td>
<td>Reduction in embodied energy of building structure</td>
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<tr>
<td></td>
<td>21</td>
<td>Use of low-environmental impact materials in building interiors</td>
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<tr>
<td>Solid Waste Management</td>
<td>22</td>
<td>Avoided post-construction landfill</td>
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<tr>
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<td>23</td>
<td>Treat organic waste on site</td>
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<td>Socio-Economic Strategies</td>
<td>24</td>
<td>Labour safety and sanitation</td>
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<td>25</td>
<td>Design for Universal Accessibility</td>
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<tr>
<td></td>
<td>26</td>
<td>Dedicated facilities for service staff</td>
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</tr>
<tr>
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<td>27</td>
<td>Increase in environmental awareness</td>
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<tr>
<td>Performance Monitoring and Validation</td>
<td>28</td>
<td>Smart metering and monitoring</td>
<td>8</td>
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<tr>
<td></td>
<td>29</td>
<td>Operation, Maintenance Protocols</td>
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<tr>
<td></td>
<td>30</td>
<td>Performance Assessment for Final Rating</td>
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<td></td>
<td>31</td>
<td>Innovation</td>
<td>4</td>
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</tbody>
</table>

**Total** 100
Legend
1. Sun Lounge
2. Sky Lounge
3. Tree Lounge
4. Aqua Lounge
5. Waterbody / Cafeteria
6. Sky Cylinder
7. Suzlon Excellence Academy
8. Welcome Lounge
9. Electrical Service Yard
10. Entry / Exit
Indian Green Building Council (IGBC)

hereby certifies that

Suzlon One Earth
Pune

has successfully achieved the Green Building Standards required for
the following level of certification under the Leadership in Energy and Environment Design
(LEED) India Green Building Rating System

LEED India for New Construction Platinum
March 2010

C N Raghavendra
Chairman, LEED India

Dr Prem C Jain
Chairman, IGBC

Jamshyd N Godrej
Chairman, CII-Godrej GBC

ADaRSH
Association for Development and Research of Sustainable Habitats
Registration No: S49762-2009, Registered in India under societies registration act XXI of 1860

Letter No. ADaRSH/CERT/SUZLON/ANNOUNCEMENT/2010/004

Date: 03rd February, 2010

Mr. Tushar R Tanti
Chairman & Managing Director
Suzlon Energy Limited
One Earth, The Academy
Opp. Nagarparka City, Hadapsar
Pune, Maharashtra
PIN 411010

Dear Mr. Tanti,

It is my proud privilege to inform you that the ‘Suzlon One Earth’ Office Campus at Pune has been awarded the Five Star GRIHA rating (provisional). Please accept my heartfelt congratulations on this achievement.

The evaluation committee has awarded a final score of 96 / 100 to the project. The Certification Hierarchy along with a provisional rating certificate shall be sent to you soon by the GRIHA Secretariat (ADaRSH). Kindly note that the final rating shall be awarded after the building is fully commissioned as per the design intent and operational for at least 12 months and an energy audit report by an energy auditor accredited by the Bureau of Energy Efficiency is submitted to ADaRSH.

Five Star GRIHA rating qualifies the project for MNRE incentives. MNRE shall release the incentives upon validation of the provisional rating with the 12 month post-occupancy energy audit report. The rating shall be valid for a period of five years from the date of issue of final rating. ADaRSH reserves the right to undertake a random audit of any of the criteria at site, for which points have been awarded.

My congratulations once again to Suzlon for achieving the “Five Star” rating.

With kind regards,

Yours sincerely,

R. K. Parekh, Ph.D.
GREEN CITIES

SMART AND LIVABLE CITIES

FORMAL CITY vs. INFORMAL CITY
PUNE SMART CITY PROGRAMME

• Green building strategies;
• A strategy to intelligently light city streets;
• Sustainable transport initiatives;
• A potable water supply strategy;
• An approach to overcome storm drainage problems;
• A river conservation project;
• A solid waste management strategy;
• A Pune cycle path plan;
• Vehicle movement tracking project;
• Converting waste to energy;
• Bio-gas from food wastes;
• A mobile application for mass transit information;
• Maximize solar energy project; and,
• The Quantified Cities Movement.
LIVABILITY INDEX

- Institutional Category (30% weightage),
- Social Category (20% weightage),
- Economic Category (5% weightage) and
- Physical Category (45% weightage)
COMPONENT INDICATORS

- Under the Institutional Theme (30%) is a Governance Index;
- Under the Social Theme (20%) are a Health Index, Education Index, Identity and Culture Index and a Security Index;
- Under the Economic Theme (5%) is the Economic Index;
- Under the Physical Theme (45%) are the Compact Development Index, Water Index, Energy Index, Waste Water Index, Solid Waste Index, Housing Index, Open Space Index, Mobility Index, and Pollution Index.
iNagrik facilitates coordination between the various urban stakeholders.

The system enables cooperative action based on evidence collected by the key stakeholder - the citizen.

It encourages a culture of evidence based consensus building and the identification of action areas through citizens’ participation.

It facilitates transparent and accountable governance as all the interfaces between stakeholders can be monitored.

It enables “high-resolution” analysis in time and space ensuring better adaptive capacities in urban planning and management.

It is a continuous iterative system in which all stakeholders participate together.
iNagrik App Structure

Scan Urban Pulse Points

Access report tab

Questionnaires accessed through Urban Pulse Points (QR codes) provide an opportunity to interact with the space

Reports can be put up on various indicators through the scan city tab. One can report on hazards, emergencies, stresses or even advantages in the city.

Access iNagrik hub

Broadcast to other volunteers and access network activity

View data

View maps

Respond to surveys and polls

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Reports can be put up on various indicators through the scan city tab. One can report on hazards, emergencies, stresses or even advantages in the city.

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View data

View maps

Respond to surveys and polls.
LIVABILITY AS INTEGRATING THE FIRST AND THE SECOND SOCIETIES

If this system is based on enumerated households of all types, legal and illegal, it will indeed be a major achievement in employing the formal system to objectify the informal system, and bring poor and low-income settlements within the ambit of formal governance.

If all slums, urbanized villages, labour camps, over-crowded city centre houses and illegal layouts are brought within the Livability Index purview, this will indeed be a milestone in integrating the first and the second societies of Pune into a cohesive urban management system.
Consumption Distribution by Multiples of Subsistency

Subsistency means a level of expenditure where 85% of expendible income is consumed on food and the fuel to cook it.

- Wealthy 4%
- Upper Middle Class (Rich) 8%
- Middle Class 18%
- Lower Middle Class 20%
- Poor 45%
- Malnourished 5%

Percentage of Population
### Percentage of Income Expended on Basic Needs (%).

<table>
<thead>
<tr>
<th>Food %</th>
<th>Clothes %</th>
<th>Shelter %</th>
<th>Transport %</th>
<th>Health %</th>
<th>Education %</th>
<th>Research %</th>
<th>Saving/Debt %</th>
<th>Total %</th>
<th>Target Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>10</td>
<td>22</td>
<td>12</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>100</td>
<td>Lower Middle Class</td>
</tr>
<tr>
<td>50</td>
<td>12</td>
<td>14</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>100</td>
<td>Poor</td>
</tr>
<tr>
<td>85</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>-10</td>
<td>100</td>
<td>Subsistence</td>
</tr>
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</table>
SLUM UPGRADEATION

- Storm Drainage
- Potable Water
- Foot paths
- Street Lights
- Solid Waste Management
- Women’s Bathing and Toilets
- Men’s Bathing and Toilets
- Community Hall
- Electricity Connection
SPECIAL ECONOMIC ZONES (SEZs)
SPECIAL HABITAT ZONES (SHZs)
EWS Shelter Scheme, Jamnagar, 1972
Cluster Plan of EWS Shelter Scheme, Jamnagar, 1972
Cluster Plan of Site and Services Scheme, Chennai, 1973 onwards
Site and Services Scheme, Chennai, 1973 onwards
Typical Block Plan of Incremental Housing, Yousufguda, Hyderabad 1976 -1980
THE PRINCIPLES OF INTELLIGENT URBANISM
THE PRINCIPLES OF ECO PLANNING
THIMPHU STRUCTURE PLAN, BHUTAN
Note: This map is to be referred along with the Project Details Table 4.9.
PROPOSED PRECINCTS PLAN
Thimphu Structure Plan

LEGEND
UV-1: Urban Village Core
UV-2: Urban Village Precinct
UV-3: Urban Village Enclave
TV: Traditional Village
UH: Urban Hub
UN: Urban Node
TH: Heritage Precinct
D: Dong Precinct
N-1: National Open Green Space
GSP: Green Space Precinct
KN: Knowledge City

E-1: Environment Conservation Precinct
E-2: Forest Environment
E-3: Agricultural Environment
E-4: Agri-Based Environment
R: Royal Estate
CR: Conservation and Recreation
ER: Endowment for Future
FD: Institutional Diplomatic Endors
UP: Urban-Connect Precinct
PB: Proposed Urban Village Boundary
PR: Proposed Road
PF: Proposed Pathway

SOURCES
Garcia et al. 2000: Data on environment, architecture, and housing
UDB 2001: Data on land use and urban planning
Garcia et al. 2000: Data on urban development and planning

Christopher Charles Bonnington Architects

WITH THE DEPARTMENT OF URBAN DEVELOPMENT AND HOUSING, MEW, RNOB AND THIMPHU MUNICIPAL CORPORATION

November 2020
GREEN PEOPLE
MGNREGA
(MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEE ACT)
Poverty Levels and Average Annual Number of Households Provided Employment in States

Number of poor

Number of households

WATERSHED MANAGEMENT
WATERSHED MANAGEMENT

• Micro level Watershed Management
• Theoretical Model: Whatever rain falls within a watershed stays within the watershed
• Equitable distribution of water with watershed households
• Self consumption cultivation versus cash crops
• Rebuilding local ecologies (water, land, flora, fauna and air)
NO TUBE WELL

AFFORESTATION

CONTOUR BUNDING

NALA BUNDING

PERCOLATION TANKS

LIFT IRRIGATION

PANI PANCHAYAT
THANK YOU

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