What Lies behind Climate-Change!

The need for a new paradigm for ‘Green’
HOW’S IT GOING?

Kya seekha? Abhi tak? Kya observe kiya?
Kya experience kiya?
Today's flow...

Let's look at what we would like to address today

- Climate change – the cause and some hypotheses (done)
- The solutions that the “global” focus on, including
  - Our cities
  - Global Energy Flow
  - Resource Efficiency & Water “management”
- The solutions that we would like to create for ourselves
  - The GRIHA way
Our Cities

By chance, if you had forgotten where we lived...
“Global”

And the “dhakosla” of “global” energy flows
“Resources”

And the “dhakosla” of ‘Resource Efficiency’
Only a little over one-third of total water potential of Indian rivers can be used. Unit is billion cubic metre. Data is for 2000.

Source: Central water commission [Get the data]
IN ADDITION...

WE HAVE DEVELOPED OUR ENTIRE BUILT-ENVIRONMENT IN A MANNER....

...THAT IT CONSUMES....AND ONLY CONSUMES...FROM THE ENVIRONMENT

• Bricks
• Cement
• Steel
• Glass
• Water
• Chemicals
• Plastics
• Land
• Food
## Scenario Analysis (BAU vs. ECBC compliant)

### Scenario 1 – GWP of a BAU Envelope for 150 m² building (Brick wall, 40% WWR, RCC Slabs, and Aluminum Frame)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Total Length m</th>
<th>Total Breadth m</th>
<th>Thickness m</th>
<th>Height or Nos. m</th>
<th>Volume m³</th>
<th>Density Kg/m³ or Kg/m</th>
<th>Total Kg</th>
<th>GWP kg CO₂ eq.</th>
<th>Total GWP kg CO₂ eq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Brick</td>
<td>30</td>
<td>19.08</td>
<td>0.23</td>
<td>12</td>
<td>83</td>
<td>1750</td>
<td>1,44,900</td>
<td>0.32</td>
<td>46,368</td>
</tr>
<tr>
<td>2 RCC</td>
<td>10</td>
<td>15</td>
<td>0.15</td>
<td>0.75</td>
<td>113</td>
<td>2288</td>
<td>2,57,400</td>
<td>0.084</td>
<td>21,622</td>
</tr>
<tr>
<td>3 Glass</td>
<td>12</td>
<td>7.632</td>
<td>0.006</td>
<td>4.8</td>
<td>3</td>
<td>2500</td>
<td>6,594</td>
<td>1.2</td>
<td>7,913</td>
</tr>
<tr>
<td>4 Aluminium</td>
<td>24</td>
<td>15.264</td>
<td>NA</td>
<td>4.8 NA</td>
<td>2.03</td>
<td>3570</td>
<td>26</td>
<td>92,809</td>
<td></td>
</tr>
<tr>
<td>5 Cement Plaster</td>
<td>30</td>
<td>19.08</td>
<td>0.012</td>
<td>12</td>
<td>7</td>
<td>1762</td>
<td>12,453</td>
<td>0.44</td>
<td>5,479</td>
</tr>
</tbody>
</table>

**Total GWP for whole building Envelope**: 1,74,191

### Scenario 2 – GWP of an ECBC Compliant Envelope (PFA blocks; Insulated walls; RCC Slab; uPVC frames)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Total Length m</th>
<th>Total Breadth m</th>
<th>Thickness m</th>
<th>Height or Nos. m</th>
<th>Volume m³</th>
<th>Density Kg/m³ or Kg/m</th>
<th>Total Kg</th>
<th>GWP kg CO₂ eq.</th>
<th>Total GWP kg CO₂ eq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PFA Blocks</td>
<td>30</td>
<td>19.08</td>
<td>0.2</td>
<td>12</td>
<td>72</td>
<td>1500</td>
<td>1,08,000</td>
<td>0.29</td>
<td>31,320</td>
</tr>
<tr>
<td>2 Insul.</td>
<td>30</td>
<td>19.08</td>
<td>0.05</td>
<td>12</td>
<td>18</td>
<td>20</td>
<td>360</td>
<td>12</td>
<td>4,320</td>
</tr>
<tr>
<td>3 RCC</td>
<td>10</td>
<td>15</td>
<td>0.15</td>
<td>0.75</td>
<td>112.5</td>
<td>2288</td>
<td>2,57,400</td>
<td>0.084</td>
<td>21,622</td>
</tr>
<tr>
<td>4 Glass</td>
<td>12</td>
<td>7.632</td>
<td>0.006</td>
<td>4.8</td>
<td>2.64</td>
<td>2500</td>
<td>6,594</td>
<td>1.2</td>
<td>7,913</td>
</tr>
<tr>
<td>5 uPVC Frame</td>
<td>24</td>
<td>15.264</td>
<td>NA</td>
<td>4.8 NA</td>
<td>2.8</td>
<td>4924</td>
<td>3.9</td>
<td>19,202</td>
<td></td>
</tr>
<tr>
<td>6 Cement Plaster</td>
<td>30</td>
<td>19.08</td>
<td>0.012</td>
<td>12</td>
<td>7</td>
<td>1762</td>
<td>12,453</td>
<td>0.83</td>
<td>10,336</td>
</tr>
</tbody>
</table>

**Total GWP for whole building envelope**: 94,712
Graphical Comparison... WOW!

Comparitive GWP in Kg CO₂ Eq.

- Scenario 1 - Brick wall with Aluminum Frames
- Scenario 2 - Flyash blocks with Insulation in walls and UPVC Window frames
Questions that YOU need to answer NOW…

1. What is the CO$_2$ absorption potential of a ‘Large Canopy’ tree?  
   1. 22 kgs per year
2. What is the radius of a ‘Large Canopy’ tree?  
   2. 10 meters
3. How much area does a ‘Large Canopy’ tree occupy?  
   3. 314 m$^2$
4. How many trees do we need to offset the CO$_2$ released from a 150 m$^2$ ECBC-compliant building?  
   4. 4305 trees needed
5. How many acres of trees does that translate to?  
   5. 334.43 acres
GRIHA is **NOT** a rating system...

- We often mistake it for a rating system
- It isn’t
- It is a philosophy and a way-of-life
- One that can find its roots in this land and its people and their requirements.
- Question is....which people are you with and whose requirements are you catering to?
THANK YOU!

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