Sustainable Habitat

We shape our buildings, thereafter they shape us.

- Sir Winston Churchill

India’s ancient buildings speak of a civilization that believed in a spiritual connect with the nature. Its forts, palaces and homes were built in harmony with nature and very often with limited wastage of resources. Over the last century, as buildings reached higher into the sky and became a symbol of modernity and progress, somewhere along the way they also become detrimental for the earth’s climate. The following facts demonstrate this:

- 40% of the energy related global emissions are attributed to buildings.
- 60% of waste comes from building or related activities.

Sustainable Buildings / Green Buildings

- Green building design strives to balance environmental responsibility, resource efficiency, occupant comfort and well-being, and community sensitivity.
- TERI, a not-for profit organization working in the field of sustainable development, defines it as “A Green building is designed, constructed and operated to minimize the total environmental impacts while enhancing user comfort and productivity”.
- The Indian Green Building Council, part of Confederation of Indian Industry (CII), provides the following definition - “A green building is one which uses less water, optimizes energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building.”
- Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by:
  - Efficiently using energy, water and other resources.
  - Protecting occupant health and improving employee productivity.
  - Reducing waste, pollution and environmental degradation.

Fig : A typical green building
The benefits of sustainable design include:

- **Environmental**: Structures built on the sustainable design model place minimal impact on the environment. This is accomplished through the prudent use of resources and by deploying systems for recycling and renewable energy sources such as solar power and wind energy.
- **Financial**: Sustainability principles integrated early within the design, offer improved life cycle costs as compared to conventional buildings due to reduced maintenance and replacement. Additional cost savings are obtained through the use of recycling systems and renewable energy sources.
- **Social**: The availability of improved air quality and natural light helps boost employee morale and productivity. Reduced strain on resources increases the availability of those resources within the specific eco-systems and geographical regions.

In a nutshell, sustainable buildings use less energy and water, generate less greenhouse gases, use materials more efficiently, and produce less waste than the conventional buildings over their entire life cycle.

**Assessment Tools and Rating systems**

A number of organisations have developed standards, codes and rating systems that let government regulators, building professionals and consumers embrace green building with confidence. In some cases, codes are written so local governments can adopt them as bylaws to reduce the local environmental impact of buildings. Building rating systems are a popular tool to bring momentum in achieving energy efficiency and sustainability in buildings. The country has currently two rating systems namely, LEED and GRIHA.

**Leadership in Energy and Environmental Design (LEED)**: The LEED Green Building Rating System, developed and managed by the USGBC (U.S. Green Building Council (a private company)), is the most widely used rating system in North America. Buildings are given ratings of platinum, gold, silver, or “certified”, based on green building attributes.

**The Indian Green Building Council (IGBC)**, part of the Confederation of Indian Industry (CII) was formed in the year 2001. The vision of the council is, “To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025.

Currently, IGBC is facilitating the LEED rating of the U.S. Green Building Council in India. LEED-India was launched in 2001 and rates buildings on environmental performance and energy efficiency during the design, construction and operation stages.

**GRIHA**

- **TERI** has developed GRIHA (Green Rating for Integrated Habitat Assessment), which was adopted as the national rating system for green buildings by the Government of India in 2007.
- It evaluates the environmental performance of a building holistically over its entire life cycle, thereby providing a definitive standard for what constitutes a ‘green building’.
- GRIHA attempts to minimize a building’s resource consumption, waste generation, and overall ecological impact to within certain nationally acceptable limits / benchmarks.
- GRIHA currently operates under ADaRSH (Association for Development and Research on Sustainable Habitats (read ahead)).
- GRIHA attempts to minimize a building’s resource consumption, waste generation, and overall ecological/ environmental impact by comparing them to certain nationally acceptable limits / benchmarks. It does so, adopting the five ‘R’ philosophy of sustainable development. It includes:
▪ **Refuse**—to blindly adopt international trends, materials, technologies, products, etc. Specially in areas where local substitutes/equivalents are available
▪ **Reduce**—the dependence on high-energy products, systems, processes, etc.
▪ **Reuse**—materials, products, and traditional technologies, so as to reduce the costs incurred in designing buildings as well as in operating them
▪ **Recycle**—all possible wastes generated from the building site, during construction, operation and demolition
▪ **Reinvent**—engineering systems, designs, and practices such that India creates global examples that the world can follow rather than us following international examples.

**GRIHA Criteria:** The set of 34 GRIHA criteria are broadly classified into four categories

1. Site Selection and Site Planning
2. Building Planning and Construction
3. Building Operation and Maintenance
4. Innovation

These four categories are further classified into mandatory, optional, applicable and selectively applicable.

**GRIHA Certification**

All buildings in the design stage, except for industrial complexes and housing colonies, are eligible for certification under the TERI GRIHA system as follows:

<table>
<thead>
<tr>
<th>Points Scored</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>50–60</td>
<td>*</td>
</tr>
<tr>
<td>61–70</td>
<td>**</td>
</tr>
<tr>
<td>71–80</td>
<td>***</td>
</tr>
<tr>
<td>81–90</td>
<td>****</td>
</tr>
<tr>
<td>91–100</td>
<td>*****</td>
</tr>
</tbody>
</table>

**Association for Development and Research of Sustainable Habitats (ADaRSH)**

- ADaRSH is an independent platform (registered as a society) for the interaction on scientific and administrative issues related to sustainable habitats in the Indian context. It was founded jointly by MNRE (Ministry of New and Renewable Energy, Government of India) and TERI (The Energy and Resources Institute, New Delhi) along with experts in the fields related to sustainability of built environment from across the country. ADaRSH promotes GRIHA—The National Rating System (Green Rating for Integrated Habitat Assessment) as a design and evaluation tool for Green Buildings and Habitats.
- All activities related to issuance of GRIHA rating are carried out by ADaRSH. Below are given some of the activities:
  - **GRIHA Pre-certification:** Pre-certification is also awarded to upcoming projects based on their commitment to comply with GRIHA. In accordance with the office memorandum by the Ministry of Environment and Forests (MoEF), GRIHA pre-certified projects are eligible to fast track environmental clearance.
  - **SVA GRIHA:** As a variation of GRIHA, ADaRSH has developed SVA (Simple Versatile Affordable) GRIHA for rating of smaller projects. SVAGRIHA has been designed as an extension of GRIHA and has been specifically developed for projects with built-up area less than 2500 sq. m.
  - **GRIHA LD (Large Developments):** ADaRSH is launching GRIHA LD rating system for planning green large developments like green campuses, townships, and special economic zones. ADaRSH is accepting pilot projects to test the draft guidelines in various contexts.
  - **Capacity-building initiatives for operationalizing the rating system:** ADaRSH conducts awareness workshops on Green Buildings and GRIHA rating system. It also organizes training of trainers and evaluators as design and development of Green Infrastructure necessitates large pool of qualified professionals in all parts of the country.

Copyright © by Vision IAS

All rights are reserved. No part of this document may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of Vision IAS