

Green Buildings – A Perspective

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Erection of Buildings consumes more than 20 percent of the electricity used in India. Almost 70% of the energy consumed in buildings are; for lighting, air conditioning, water heating and usage of fire alarm systems. Water, the most vital source gets consumed continuously from construction to the final operation. A series of building process and inhabitant functions produce large amounts of waste. Buildings are one of the most important contributors of pollutants that affect the urban environment and contribute to adverse climatic conditions. Hence to address these problems there is a need to design, construct and integrate buildings in the most scientific and environment friendly manner.

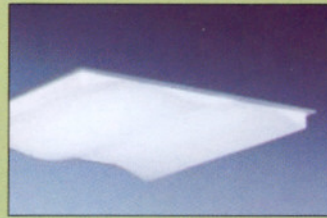


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Construction or Sustainable Buildings, is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle. Although new technologies are constantly being developed to complement current practices in creating greener structures, the common objective is that green buildings are designed to reduce the overall impact of the built environment on human health and the natural surroundings. Green buildings help by minimum depletion of natural resources during its construction, operation and occupancy.

Green building use less water, optimise energy utilization, conserve natural resources, generate less waste and provide healthier spaces for occupants, as compared to a

Green Building, also known as Green



Luminaires complying with Green Building Lighting requirements

“Green building use less water, optimise energy utilization, conserve natural resources, generate less waste and provide healthier spaces for occupants, as compared to a conventional building.”

conventional building. A green building's liabilities to the environment are minimized by water recycling, rain water harvesting, planting trees, minimizing light and noise pollution and effective garbage treatment. The aim of the green building is to minimize the demand on non-renewable resources. Green buildings are evolved through a design process that requires all the concerned professionals – the architect, the landscape designer, the air conditioning, electrical, plumbing and energy consultants to work together as a team that carefully considers all aspects of the building and associated systems.

The following aspects of the design need to be looked into in an integrated way in a Green Building Construction:

- a) Site planning
- b) Building envelope design
- c) Building system design: HVAC (heating, ventilation, and air conditioning), lighting, Plumbing, electricity and water heating
- d) Integration of renewable energy sources to generate energy on-site
- e) Water and waste management
- f) Selection of ecologically sustainable materials
- g) Quality of indoor ambience

Green buildings are certified by

- a) TERI – GRIHA
- b) LEED (Leadership in Energy & Environmental Design)
- c) LEED India

A) TERI – GRIHA

Ministry of New and Renewable Energy has adopted TERI – GRIHA

(The Energy and Resources Institute – Green Rating for Integrated Habitat Assessment) as National Rating System of India. It is a green building 'design evaluation system', and is suitable for all kinds of buildings in different climatic zones of the country and in particular for non-AC buildings. Internationally, voluntary building rating systems have been instrumental in raising awareness and popularizing green design. However, most of the rating systems devised have been tailored to suit the building industry of the country where they were developed.

TERI took the responsibility of popularizing green buildings by developing a tool for measuring and rating a building's environmental performance in the context of India's varied climate and building practices. TERI-GRIHA evaluates the environmental performance of the 'whole building' over its life cycle, thereby providing a definitive standard for what constitutes a 'green building'. The rating system is based on accepted energy and environmental principles, and strikes a balance between established practices and emerging concepts, both national and international.

The green building rating system devised by TERI is a voluntary scheme.

TERI – GRIHA Rating system

Points scored	Rating
50–60	One star
61–70	Two star
71–80	Three star
81–90	Four star
91–100	Five star