



Net Zero Energy Buildings

The **Indian Green Building Council (IGBC)** has come out with Net Zero Energy Buildings rating system in collaboration with the **World Green Building Council** and the **United States Agency for International Development (USAID)**.

- IGBC also launched '**Green Building Rating System for Hill Habitats**' intended for hill cities, differentiating the sustainability needs of urban development in hills as compared to cities in the plains.
- The theme for Green Building Congress 2018 is '**Green Built Environment for People & the Planet**'.
- IGBC plans to promote the **concept of 'Net Zero'** in India. Under this initiative, the focus is **reducing the annual energy consumption by 40-50%** with respect to national baseline and cut down energy cost by about 30 per cent.
- The rating system launched during the IGBC's 16th Green building Congress 2018 seeks to complement the National Mission for Enhanced Energy Efficiency and the National Solar Mission.

Net Zero Energy Buildings (NZEB)

- A net-zero energy building is one that **relies on renewable sources to produce as much energy as it uses**, usually as measured over the course of a year.
- Homes and other structures that create almost as much energy as they use are sometimes called near-zero energy buildings.
- It is also possible for a building to produce an energy surplus, sending excess back to the electrical grid.
- Net-zero energy buildings start with **energy-conscious design**. Many features work without an energy source. For example:
 - In cold climates, south-facing buildings with large expanses of windows on that side can produce heat through passive solar gain.
 - On the cold north side of the building, smaller windows can angle to wider openings, permitting more light while limiting heat loss.
 - In warmer seasons, passive ventilation systems can pull cool air up from the lower levels and vent it through the building's highest point.
 - Rooftop systems can collect rainwater to reduce usage of treated water.
- **Solar panels, heat recovery systems, geothermal heating and wind turbines** are among the other technologies used to achieve net-zero status.

Indira Paryavaran Bhavan

- Indira Paryavaran Bhavan in **New Delhi** is **India's first net zero energy building** that has been constructed with the adoption of solar passive design and energy-efficient building materials.
- It is one of the exemplary projects to be rated under Green Rating for Integrated Habitat Assessment (GRIHA) and has set standards that can be emulated by upcoming buildings.
- The design allows for **75% of natural daylight to be utilised to reduce energy consumption**.
- The entire building has an **access friendly design for differently-abled persons**.
- The building is fully **compliant with** the requirements of the **Energy Conservation Building Code of India (ECBC)**.
- Total energy savings of about 40% have been achieved through the adoption of energy efficient

system of air-conditioning.

- Green materials like **fly ash bricks, regional building materials, materials with high recyclable content, high reflectance terrace tiles and rock wool insulation** of outer walls have been used.

Need for NZEB along with Green Building

- Due to **increasing urbanisation**, it becomes imperative to plan and conceive the cities as green, right from the initial stages.
- While, various amenities like lighting, air conditioning, water heating provide comfort to building occupants, but also **consume enormous amount of energy and add to pollution**.
- Buildings have **enormous impact on environment, human health and economy**. The energy used to heat and power our buildings leads to consumption of large amounts of energy, mainly from burning of fossil fuels, oil, natural gases and coal, which generate significant amounts of carbon dioxide, the most widespread greenhouse gas.
- Further, building construction industry produces huge amount of demolition waste and greenhouse gases (35-40%).
- **Building green** is about creating buildings that optimize on the **use of local materials, local ecology** and most importantly they are **built to reduce power, water and material requirements**.
- Such sustainably built green buildings are **environmentally responsible** and **resource-efficient**, right from location selection to the demolition after its life cycle ends.
- According to TERI estimates, if all buildings in Indian urban areas were made to adopt green building concepts, India could save more than 8,400 megawatts of power, which is enough to light 550,000 homes a year.

Green Building Certifying Agencies

There are various certifying agencies that help building developers to implement these principles and get green certification. Some of them are:

- **LEED-India** - Leadership in Energy & Environmental Design (LEED) is an international recognized certification system for the green buildings. The LEED-India Green Building Rating System is an international benchmark for the design, construction and operation of high performance green buildings (provided by IGBC).
- **IGBC Ratings** - The Indian Green Building Council (IGBC) is a division of the Confederation of Indian Industry that works closely with the government and aims at sustainably built environment.
- **BEE-ECBC** - The Energy Conservation Building Code (ECBC) was established by the Indian Bureau of Energy Efficiency (BEE) to set energy efficiency standards for design and construction of buildings.
- **TERI GRIHA** - The Green Rating for Integrated Habitat Assessment (GRIHA) is a national rating system for green buildings that is adopted while designing and evaluating new buildings.