

# In Pursuit of Holistic Green Health Care Facilities

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## INTRODUCION

*“It is health that is real wealth and not pieces of gold and silver.” (Mahatma Gandhi)*

Of late, rapid advancements in the health care industry have made recovery and recuperation of patients faster and precise, thanks to the prowess and skills of the medical fraternity. However, there is a growing need to design buildings and projects in the health care sector, which holistically address the health, comfort, and well-being of all the persons involved in the health care setup.

Understanding this imperative, the Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII), has launched an exclusive rating system designed to holistically take care of the doctors, nursing staff, caregivers, paramedics, and all occupants involved in the health care facilities.

## GREEN BUILDING MOVEMENT IN INDIA

Spearheading the green building movement in India is IGBC, a part of CII. The IGBC has the unique distinction of ushering and pioneering the 21st-century modern Green Building Movement in the country.

As on January 2017, the IGBC had already facilitated an overwhelming 4.48 billion sq. ft of green spaces in the country, thereby enabling India to become the second largest registered green footprint country in the world. Over 3,900 projects are adopting IGBC green building rating systems. The reason for this significant growth is the fact that “green buildings make good business sense” and IGBC within a short time could demonstrate that constructing a green building is technically feasible and economically viable.

Chairman IGBC Green Healthcare Rating  
 Consultant, World Bank  
 Vice President, RFHHA  
 Visiting Professor, London South Bank University, UK  
 Former Chief Architect, Ministry of Health and Family Welfare Government of India  
 Advisor (Architecture), HLL Lifecare Ltd. (A Govt. of India Enterprise)

To suit different building types, IGBC has the unique distinction of launching 18 indigenized green building rating systems. All the ratings are designed to address national priorities and are a blend of ancient architectural practices and modern technological innovations.

## INDIAN GREEN BUILDING COUNCIL GREEN HEALTH CARE RATING SYSTEM

Introducing green concepts in the health care facilities can help address national issues like infection, epidemics, handling of biomedical waste, water efficiency, energy efficiency, reduction in fossil, fuel use for commuting, consumer waste, and, in general, conservation of natural resources. Most importantly, these concepts can enhance patients’ health, recovery, and well-being.

Against this background, the IGBC has launched “IGBC Green Health care Rating System” on October 6, 2016, in the Green Building Congress at Mumbai. This rating program is a tool that enables the designer to apply green concepts and reduce environmental impacts that are measurable.



**Photo 1:** A green building is one that uses less water, optimizes energy efficiency, conserves natural resources, generates less waste, and provides healthier spaces for occupants, as compared with a conventional building

Commercial	Health and wellbeing	Industrial	Built environment
IGBC green new buildings	IGBC green health care facilities rating	IGBC green factories	IGBC green cities
IGBC green existing buildings	IGBC wellbeing rating*	IGBC green SEZ	IGBC green villages
IGBC green interiors			IGBC green township
IGBC green campus			IGBC green landscape
IGBC green data centers			
	Residential	Education	Transit
	IGBC green homes	IGBC green schools	IGBC green metro stations
	IGBC green residential society		IGBC green existing metros
	IGBC green affordable housing*		IGBC green railway stations



Photo 2: Launch of IGBC Green Healthcare Facilities Rating System

## BENEFITS OF GREEN HEALTH CARE FACILITIES

Green health care facilities can have tremendous benefits, both tangible and intangible. The most tangible benefits are the reduction in water and energy consumption right from day one of occupancy. The energy savings could range from 20 to 30% and water savings around 30 to 50%. The intangible benefits of green health care facilities include enhanced air quality, faster patient recovery, daylighting for patients, connectivity to outdoor environment, health and hygiene of occupants and patients, and safety benefits.

The national benefits addressed in IGBC Green Health Care Facilities include the following:

- Reduces resource consumption (power and water)
- Would address sustainability aspects in health care facilities
- Augments the health care policies of the country
- Minimizes hospital-acquired infections (HAIs)
- Ultimately enhances public health.

## KEY FEATURES IN GREEN HEALTH CARE FACILITIES

### Healing Architecture

The elements of healing architecture play a major role in designing the health care facilities. The architecture in the hospital should be designed in such a way that the natural daylight is fully optimized. The nature and greenery should be integrated well within the building. The color psychology also adds up in creating a healing and therapeutic environment for faster recovery of the patients. The selection of colors can be based on the health problem of the patients.

### Occupant and Patient-centric Design

Green health care facilities also ensure the comfort and well-being of patients, doctors, and other occupants. By design, in a Green Hospital, acoustical comfort of

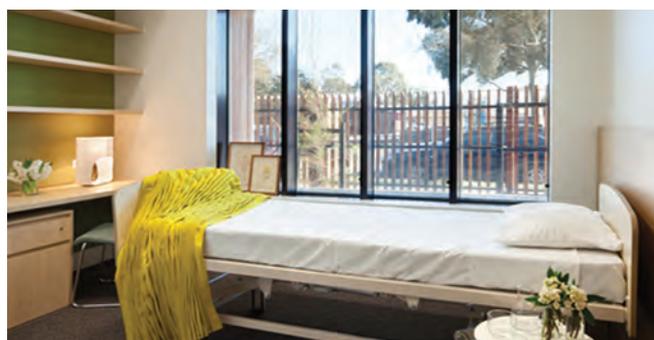


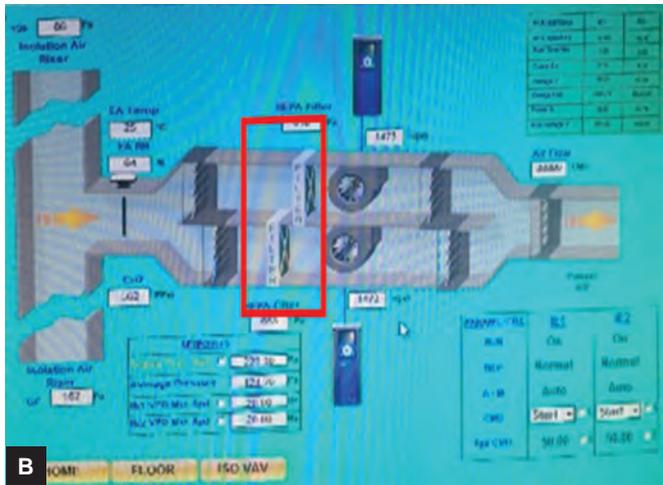
Photo 3: GNRC, Guwahati, IGBC gold certified

all the occupants are taken care and full efforts to minimize noise disturbances are ensured. Lower reverberation time is ensured in all the critical spaces of the hospital setup.

The hospital would also be ergonomically designed for the doctors and the medical staff. Design of furniture, such as height and depth of the shelves, ease of approach along with adequate circulation movement is ensured in a Green Hospital. Further, basic services, such as automated teller machine, restaurants, supermarket should be prominently located and readily accessible for the visitors, patients, and doctors.

### Infection Control

Controlling HAI is one of the key features in a Green Hospital. The infection control strategies revolve around the concept of dilution, filtration, pressurization, and purification. Dilution of stale air by infusing fresh air is encouraged. The minimum outdoor air changes should be as per ASHRAE-170 "Ventilation of Health Care" standard. Filtration at two levels should be installed in critical areas, such as surgery rooms, laboratories, patients' rooms, etc. The use of high-efficiency particulate arrestance (HEPA) filters is encouraged in all the isolation and operation rooms. Infection can also be controlled by incorporating antibacterial coatings and copper-based surfaces at all high touch areas, such as



**Photos 4A and B:** Installation of HEPA filters in isolation rooms at Sir HN Reliance Hospital, Mumbai, IGBC gold-rated hospital

bed rails, telephone, toilet seat, toilet flush handle, and inner washroom doorknob.

Purification techniques, such as germicidal/ultraviolet lamps in cooling coil of air handling unit and photo hydro ionized oxidation + at duct level should be installed to ensure the eradication of nosocomial infections.

### Design of Isolation Room

Green health care facilities ensure adequate and well-designed isolation rooms, thereby eliminating the risk of HAI. Minimum 10% of the total in-patient bed capacities should be provided based on isolation room design. The HEPA filters can be installed at return air duct to treat the stale air before exhausting it to the external environment.

### Sanitization and Hygiene

Green hospital encourages sanitation design and cleaning practices based on the protocols developed by the Centers for Disease Control. The guidelines recommend frequent cleaning of high touch surfaces like bed rails, telephone, toilet seat, toilet flush handle, and inner doorknob.

### Biomedical Waste Management

Waste management within hospitals is one of the key and sensitive issues that need extensive attention at all the stages: Design, construction, and operation. Automated waste management system should be installed for segregation of biomedical waste. This system ensures reduction of human intervention by 90%. Waste management plan for solid and liquid biomedical waste should be planned based on the Ministry of Environment & Forests' Bio-Medical Waste (Management and Handling) Rules 2016.

### Water Conservation

Hospitals are one of the water-intensive sectors. A green health care facility should encourage the concept of reduce, recycle, and recharge in both design and operation phase. Water-efficient fixtures, such as dual flush system, aerators, and waterless urinal should adopt the specifications of Uniform Plumbing Code, India. The treatment and recycling of wastewater should be encouraged. The recycled water can be used for various applications, such as landscaping and flushing. Further, water meters should be installed at various applications, thereby improving the water performance of the health care facilities. Water savings around 30 to 50% can be demonstrated in a Green Hospital.

### Energy Efficiency

Promoting energy efficiency is one of the top priorities of Green Hospitals. The energy savings could range from 20 to 30%. By adopting efficient envelope, lighting and



**Photo 5:** Around 40% of water savings are achieved in Ruby Hall Clinic, Pune, IGBC gold certified



**Photo 6:** Energy efficiency of around 30% is achieved in Max Super Specialty, Bhatinda, IGBC gold certified

HVAC systems, and building management system, the energy consumption will come down significantly.

These facilities also encourage the installation of onsite and offsite renewable energy sources, including solar, wind, and geothermal.

## **CONCLUSION**

The health care sector in India is growing at a rapid pace and contributing immensely to the growth of the quality of services. The sector is expected to grow several-fold in the next decade. While this augurs well for the country, there is an imminent need to incorporate green concepts and techniques in this sector, which can aid growth in a sustainable manner. Going the green way will facilitate a greener and healthier India.

