

Study of Practical Aspect of IGBC Rating System

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Abstract – As there is only one earth, it is essential to know the relationship in the nature to maintain environmental balance .First challenge is to protect the earth, Green the earth and heal the earth. The depletion in natural resources has lead to unsustainability of the environment. The building sector accounts for 30-40% of the total global energy consumption. Out of which 80% is consumed during the operational stage of building and remaining 20% of during its construction phase. Thus some urgent and hard decisions to be taken to stop the deterioration of the environment.

This paper highlights the study of sustainable perspective in which we analyse the buildings in terms of Sustainable Architecture and Design, Site Selection and Planning, Water Conservation, Energy Efficiency, Building Materials and Resources, Indoor Environmental Quality and innovation. The green building study highlights implementation of sustainable practises as per building feasibility with available limited resources to make the building sustainable and to achieve certification.

Key Words – Sustainability, Energy Efficiency, Water Conservation, Green Building Practices

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1. INTRODUCTION

Sustainable development is expected to protect the Earth, Green the Earth and heal the earth. It refers to fulfilling the present needs without ignoring the needs of future generation. It also involves the different implementation of sustainable practices according to energy efficient principles during pre-construction, construction stages and post construction activities to get some extra benefit as a reward. Now some urgent and hard decisions should be taken for the concept of sustainability and their implementation which is most important to improve the disturbed quality of environment and life.

According to the Indian Green Building Council (IGBC) India will have 1 lakh buildings will certify by 2025. Currently it has only 2000 green rated buildings. India is emerging as a rapid adopter of sustainable building practices and holds third rank. As per latest US Green Building Council report in India there is 11.64 million gross square meters LEED certified space.^[3]

Climate change, energy scarcity, Water scarcity, Raw material scarcity, food security, waste management pose ever increasing threat to sustainability. Thus green building is only alternative to achieve the sustainability in which planning, designing, construction, operation and maintainance is carried out with less water consumption, optimizing energy efficiency, conserving natural resources, generates

less waste and provide maximum comfortable environment to occupants

2. WHY NEW GREEN BUILDINGS?

Building sector is the largest energy, water, electricity, raw material consuming and green gas emitting source around the world. They contribute around 40% of global greenhouse gas emission, 30% of carbon dioxide emissions, 65% of electricity, 50% of raw material, 35% of municipal solid waste generated and 30% to 40% energy consume^[3]. Due to these negative environmental impacts of traditional building, the green building concept has attracted more attention in recent years. Factors like Energy, Water and Material efficiency, improving indoor air quality and optimal operation and maintenance cost minimises the negative environmental effects using best practices of 'Green Building.'

3. IGBC CERTIFICATION FOR NEW BUILDINGS

To get certified as a green building the proposal must satisfy all the primary requirements and the minimum numbers of credit points from IGBC new green buildings certification. It is the rating system developed in India for new buildings. Providing the all supporting documents is must to earn minimum credits. After registration preliminary documents

submission has to be done. Review for preliminary submission is given by IGBC. After review and reply, it is further sent for final documentation. It is possible after construction. After site visit and review, it is further sent for final certification, however if not accepted appeal is made and whole processes is repeated

One option provided for projects to get certified at design stage. The documents to be submitted for pre-certification must include the project design features which will be implemented

Documentation is submitted into two phases for certification

3.1. Preliminary Phase

This phase includes submission of all documents along with the mandatory requirements and minimum number of credits. After preliminary submission review is done by third party assessors and review comments would be provided within 30 days.

3.2. Final Submission

This phase includes submission of clarification to preliminary review queries and final submission. This review will also be provided within 30 days after rating achieved. The pre-certification is valid for 3 years from the date of pre-certification award provided that require to apply for certification or to submit construction report once in 6 months from pre-certification award.

4. IGBC RATING SYSTEM PARAMETERS

Sr. No.	Category	Mandatory Requirement	Points
1	Sustainable Architecture and Design	0	5
2	Site Selection and Planning	2	14
3	Water Conservation	2	19
4	Energy Efficiency	3	28
5	Building Materials and Resources	1	16
6	Indoor Environmental Quality	2	11
7	Innovation and Development	0	7
	Total	10	100

Source-IGBC Green New Buildings Rating System Version 3.0
Abridged Reference Guide September 2014

4.1. Sustainable Architecture and Design

It involves integrated design approach, Site Preservation and Passive Architecture carries separate points. Integrated design approach practices involve approach towards enhanced building performance, from planning stage to completion stage of the project. Where as site preservation includes to maintain the site features and to minimise the negative environmental impacts like site contour, water bodies and channels, natural rocks, existing topography / landscape and existing trees. Passive architecture involves climate-responsive concepts and design features and passive cooling / heating technologies. This credit overall carries 5 points.

4.2. Site Selection and Planning

Site selection and planning includes Local Building Regulations and Soil Erosion Control as its mandatory requirements where as basic amenities, proximity to public transport, low-emitting vehicles, natural topography or vegetation, preservation or transplantation of trees, heat island reduction, non-roof, heat island reduction, outdoor light pollution reduction, universal design, basic facilities for construction workforce, green building guidelines carries separate points.

Basic amenities and proximity to public transport intent is to use of low-emitting vehicles (such as electric and CNG powered) to encourage the use of non-fossil fuel vehicles and minimise the negative impact on environment. Natural topography or vegetation and preservation of trees must to maintain biodiversity. Reducing disturbances to microclimate by minimising heat island effect. Outdoor light pollution control has to be done on site by Prescriptive Approach towards lighting and its power density. Adequate facilities must be provided for the workforce. Site selection and planning carries 14 points.

4.3. Water Conservation

Water conservation includes rainwater harvesting, (Roof and Non-roof) and Water Efficient Plumbing Fixtures as its mandatory requirement whereas Landscape Design, Management of Irrigation Systems, Waste water treatment and reuse, and Water Metering carries separate points. Rainwater harvesting has to be done on site for alternative storage of water for non-potable purpose such as flushing, landscaping, air cooling. For water efficiency, use of fixtures which having limited flow rate as recommended by IGBC. Water metering includes compulsory installation of water meters to observe the performance of the project. Outdoor temperature can be reduced by landscaping and for that management of irrigation system is required. The landscape should be min 10% of site area. Also waste water should be treated to the quality standards prescribed by pollution control board and at least 25% treated water should be used for non-potable purposes. Water conservation carries 19 points

4.4. Energy Efficiency

Energy Efficiency includes Ozone Depleting Substances, Minimum Energy Efficiency and Commissioning Plan for Building Equipment & Systems are the mandatory requirements. Whereas eco-friendly refrigerants, enhanced energy efficiency, on-site renewable energy, off-site renewable energy, commissioning, post-installation of equipment & systems and energy metering and management carry separate points.

IGBC recommended using BEE 3-star eco-friendly refrigerants and halons in the building, to minimise negative impact on the ozone layer and to reduce the energy consumption as well. On-site renewable energy and off-site renewable energy encourages adopting possible use of renewable energy on the site. Energy metering must be done for continuous monitoring and enhance the performance of the building as well. Use of solar panel helps to reduce the burden on fossil fuels.

4.5. Building Materials and Resources

It includes 11 points and segregation of waste is mandatory requirement. Segregation of waste and organic waste management intent to segregation of waste at source and recycling of material to avoid wastes being sent to landfills. Same as sustainable building materials intent to reduce dependence on materials that can have negative impact on environment. IGBC recommends At least 2.5% salvaged or reused material of the total building material should be used. Also 95% of construction waste should be diverted from landfills.

4.6. Indoor Environmental Quality

It has fresh air ventilation and tobacco smoke control as its mandatory requirement. Whereas the credit CO2 monitoring is to control the level of CO2 occupant comfort and well being. IGBC recommends demonstrate through computer simulation that 75% of regularly occupied spaces in the building achieve daylight IL luminance of minimum 110 Lux in clear sky condition. Also building occupants must have access either to sky or flora and fauna or both. To reduce adverse health impact on occupants, use paints and coating with low or no VOC for 95% of interior wall and ceiling surface area is recommended. Thermal comfort, indoor temperature is to maintain building temperature and humidity level for well-being of occupants. Facilities for differently able people ensures making the building user-friendly by providing ramps, audio bell provision in elevators etc This credit carries altogether 11 points

4.7. Innovation and Development

It includes credits under innovation and one IGBC AP credit. There should be at least one IGBC AP member in the project team. Whereas valid innovations expected other than guided by IGBC. For optimization in structural design it is recommended to demonstrate a saving of at least 5% by weight of steel and cement. Also recommends replacing at least 10% of potable water by treated waste water provided that quality of construction should not be degraded.

5. CONCLUSION

Achieving certification for new building from IGBC is to facilitate a holistic approach to create environment

friendly building through Sustainable Architecture and Design, Site Selection and Planning, Water Conservation, Energy Efficiency, Building material and resources, indoor indoor air quality. It possesses lots of tangible benefits and intangible benefits as well. There is need to work to minimise the initial cost of green projects. There is a need of an hour that Government has to take a step to define and apply separate green policies and include it in a city wise

Development plan also allowing extra FSI to the developers and some extra discount in registration to customers for successful implementation to the route level. Easy approvals, faster clearance and transparency is also important for implementation of the same. The rating system is fundamentally designed to address national priorities and to enhance the quality of life of users. Thus to certified as a green building new building should satisfy all mandatory requirements and minimum numbers of credit points.

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