

Study On Various Rating System For Green Building In Chennai

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ABSTRACT. Buildings are tangible which can be used to reduce the climate change. It is something which we all share common. Building produces more green house gases than all other transportation combined. All this make way for the empowering sustainability of environment and by green building concept it can be achieved. The prominent and well known energy rating system for the structures are LEED, GRIHA etc.. are studied and compared below and extended its further application for the Sri Sairam Engineering college campus. The major part of rating for green building focuses on the economical use of electricity, water conservation measures, proper waste treatment. The rating we look here is the rating which includes CMO (construction, operation and maintaince) of the structure. As a conclusion in this project, the localized rating systems for green building in Chennai is developed withthe help of SBToolsand also the best rating system does the college can apply is suggested.

1. INTRODUCTION

In the past few years, world is emerging into the growth with the word of sustainability. A ‘green’ building in a new stepping stone towards the limelight to reach its core in this new era. The main objective of the rating system for green building is to eliminate the negative impact caused to the environment

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and bring a sustainable life for the building with effective and efficient use of energy using source. The need of such analysis of the structure values to standard of living by:

- Decisive energy use like water and other resources
- Renewable energy use like the solar energy.
- To enable the renewable and recycle process and controls pollution and helps in the reduction of waste
- It helps in maintaining good quality of air present around
- Proper use of inexhaustible, harmless and clean materials.

GREEN BUILDING RATING TOOL. Certification or the Green building rating tools is used to evaluate and acknowledge the buildings that fulfill certain green demands or grades A push towards sustainable nature has made the peoples mind to have sustainable tool development and certification

towards the need and ongoing strategies. The rating provides independent verification on its sustainability.

The tool of rating voluntarily recognizes and remunerates the firms and corporations that constructs and employs green buildings in order to inspire and boost them to propel the frontier on the viability. The standards were developed within the market in response to growing concerns for product toxicity and its impact on human health and indoor environmental quality. As therefore the building structure is designed, constructed and used in such a way by setting a goal to the society to meet their need and also conserve the energy for further need.

They prompt the market by setting a measure or norms and promote the government's norms and strategies on building regulation, labour force training and other corporate policies. Some Green Buildings rating systems like:

- IGBC
- GRIHA
- LEED
- BEE

1.1. IGBC RATING.

IGBC rating brings out an viable usage and key to reduce the carbon footprint. It promotes design provides an integrated approach taken into account the process of life of the resources.

The rating system of the Indian Green Building Council is majorly systematized for the novel and already prevailing campuses. Confederation of Indian Industry (CII) formed the Indian Green Building Council (IGBC) in year 2001. IGBC is the non profit research institution having its offices in CII-Sohrabji Godrej Green Business Centre, which is itself a LEED certified Green building. Indian Green Building Council (IGBC) has licensed the LEED Green Building Standard from the USGBC. IGBC facilitates Indian green structures to become one of the green buildings. It has developed its rating system for different type of building and has a conformity with US Green Building Council. All the appropriate points can be assessed by the team using this system of rating with an appropriate checklist. A project is eligible for the IGBC Certification of Green Campus system of rating, if it meets all the essential points that is mentioned in Table 1.

TABLE 1. IGBC GREEN BUILDING RATING SYSTEM

S.NO	CRITERIA	MAX	AWARDED
1	Site Planning and Management	22	13
2	Sustainable Transportation	11	4
3	Water Conservation	18	5
4	Energy Efficiency	21	11
5	Material and Resource management	3	1
6	Health and Well Being	6	4
7	Green Education	3	3
8	Innovation in Design	6	NIL
	TOTAL	90	41

1.2. GRIHA RATING. India renowned for its growing economy and occupying its seventh position worldwide has begun to establish its growth towards efficiency and sustainability. In the growth of the nation's economy, civil industry plays an important role which booms the real estate development taking place in India. The necessity of greener construction industry therefore comes into light due to the rapid energy shortfall, resource crisis and the emission of greenhouse gases into the atmosphere.

Since the last few years the Green Rating for Integrated Habitat Assessment often known as GRIHA, the simple Versatile Affordable and large development rating systems of GRIHA are seeking to discourse these importance and gain sustainability. GRIHA rating certification is meet with Table 2.

TABLE 2. GRIHA rating certification

S.NO	CRITERIA	MAX	AWARDED
1	SITE PARAMETERS	6	3
2	Maintenance& Housekeeping	17	8
3	Energy	35	20
4	Water	25	10
5	Human Health & Comfort	12	11
6	Social Aspects	5	4
7	Bonus Points	4	0
	TOTAL	104	56

1.3. **LEED.** LEED is exemplified to be the world’s rating system of design and operation of green buildings. For about the past 18 years, various variants of LEED have taken forward towards the growth of the world’s green building market with 93,000 or more certified projects and using 19.3 million square feet of space used across the world.

Today, LEED v4 is the world’s most accurate system of rating of the green buildings. Right from enhancing the performance of energy to assert human health and integrable designing of the buildings, LEED is encouraging project teams to operate beyond the status quo 100 total points are available. 40 points in minimum is required go basic certification and the higher points leads to more perfection for sustainability. For certification 40 – 49 points is the minimum, with next level of silver certification point about 50 – 59, then further gold certification about 60 to 79, and the top priority in certification is Platinum with more than 80 point of score.

1.4. **BEE RATING.** Energy appraisal studies in constructions have shown a greater prospective for saving the energy in the buildings of both the regime and the commercial. On this consideration there is a need on the special focal to improve a mastery in conservation of energy in the structure. A conventional initiative on National commercial energy was taken up in order to set TABLE 3. LEED V4.1 RATING SYSTEM

S.NO	CRITERIA	MAX	AWARDED
1	Locality and Shipment	14	8
2	Viable Sites	4	3
3	Water Efficiency	15	10
4	Energy and Atmosphere	35	15
5	Materials and Resources	9	4
6	Indoor Environmental Quality	22	12
7	Innovation	1	0
	TOTAL	100	52

up a convention to regulate the collection of energy data, guidelines for commercial buildings, setting and monitoring of energy performance and to use the above data to upgrade the efficiency of energy in the buildings. This data can aid the associates to assess the energy efficiency in the buildings and make improvements when compared to other constructions and identify the peak performers.

TABLE 4. LEED V4.1 RATING SYSTEM

S.NO	CRITERIA	MAX	AWARDED
1	Locality and Shipment	14	8
2	Viable Sites	4	3
3	Water Efficiency	15	10
4	Energy and Atmosphere	35	15
5	Materials and Resources	9	4
6	Indoor Environmental Quality	22	12
7	Innovation	1	0
	TOTAL	100	52

1.5. RATING FOR CHENNAI CITY USING SB TOOLS.

- Chennai ($E80^{\circ}14'51''$ and $N13^{\circ}03'40''$) is the capital of Tamil Nadu that is present on the shores of Bay of Bengal.
- It is the fourth largest metropolitan cities of India.
- Chennai experiences a scorching climate as it lies on the thermic equator.
- The most humid time span is likely from May to June where the temperature is about $42^{\circ}C$.
- January is considered to be the frigid climate with a temperature of about $20^{\circ}C$ or even less.
- Chennai gets most of the rainfall from the north east monsoon (mid September to mid December)
- Area of Chennai city : 174 Sq.Km
- Elevation above the sea level: 6 m
- Population: 4.68 million (2011 census)
- Floating population: about 20 lakhs

TABLE 5. CHENNAI GBRS USING SB TOOLS

S.NO	CRITERIA	AWARDED
1	Location,Service-site Characteristics	6
2	Site Regeneration,Urban Design and Infrastructure	33
3	Energy and Resource Consumption	17
4	Environmental Loading	8
5	Indoor Environmental Quality	15
6	Service Quality	5
7	Social Aspects	4
8	Culture and Heritage	4

9	Perceptual Aspects	4
10	Cost and Economic Aspects	2
	TOTAL	100

CONCLUSION

This project makes us to study about the different rating system available and how the rating has been awarded. The study leads to know the advantages of the each rating like the LEED is universally accepted and IGBC has been made to fit for India and the BEE rating system concerns more about the power than any other criteria and the GRIHA is giving equal importance to water and maintenance and energy. The rating system also suffers from the disadvantages like the BEE does not involve the plantation of trees and the LEED is suitable for foreign countries and the GRIHA is less specific when compared to the LEED rating. To arrive the best rating system for particular area because the major disadvantage in rating system is which it cannot be localized. As the result the IISBE had published the SB(Structural Building) Tools which helps us to create the rating system for particular locality. Being in the Chennai from childhood helps us to know the cultural importance in Chennai and the water problems in Chennai has been used wisely to developed our own rating system for Chennai area.

We can derive the second part of conclusion from this project is that the best rating system that the college can apply to get the maximum rating is been found. The best rating optimum for SRI SAIRAM ENGINEERING COLLEGE is that GRIHA rating. As GRIHA giving equal importance in every aspects this college scores “3 STAR” recognition in this particular rating system. Has at the report we recommend the SRI SAIRAM ENGINEERING COLLEGE to apply for GRIHA.

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