

Green Rating And Green Building Certification For Buildings Of Kerala

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Abstract- *Green building means the one which ensures optimum utilization of water and energy, conserves natural resources, generate less waste and provide healthier spaces for occupants as compared to conventional building. By providing green building and sustainability provisions in buildings, it is expected to reduce the energy and water consumption to less than half of the present consumption in conventional buildings and complete elimination of the construction and operational waste through recycling and reuse.*

Keywords- Green Building-Sustainable-Indian Green Building Council-Solar Energy-Green Rating-Social Responsible

I. INTRODUCTION

Green building in other phrase is a practice of green construction or sustainable building. It deals with, both structural and application of processes that are eco- friendly and resource-efficient throughout a building's lifecycle: from planning to design and execution such as construction, operation, and maintenance, renovation, and demolition . This process is accomplished with the help of skilled labours corresponding to the consultants, the contractors, the engineers, the architects and the clients . The main aspects of Green Building practices contribute to the designing of classical building related to economy, durability, utility, and comfort . The benefits of green building include reduction of water and energy consumption, reduction of ecological footprint, and the improvement of the quality of workspace. The basic function of the conventional building is to impart shelter. Apart from this, the green building provides Visual comfort and Thermal comfort. These 'comfort zones' can be provided artificially or naturally. Moreover, these zones respond to the Local and Global conditions. It is important to say that the increase in energy demand and excess greenhouse gas emissions to the environment leads to the framework of energy efficient buildings in the modern construction industry . The two scenarios which are closely interlinked are environmental and global energy. On the other hand, the consumption and supply of energy lead to the wider environmental issues including air contamination, deforestation, ozone decimation, and the radioactive waste . As the building sector is responsible for more than 40% of the

total primary energy consumption of World's energy consumption, and about 30% of the total emissions of Carbon dioxide. It plays a key role in solving these environmental issues . Due to the rapid increase of energy consumption, enfeeblement of energy resources and environmental concerns around the world, the implementation of green building has a significant attention in the society. It is said that, between 2010 and 2040, the expected increase in the global energy usage is 56% . The implementation of green building rating system is essential in the current world energy scenario. It reduces the energy consumption without compromising the comfort zonal levels with minimum operational costs. The lifecycle costing of the investment is better. In recent decades, the trend in the green building industry has suddenly increased worldwide. The thought of green rating systems of green buildings arises in India. With the global trend, the rating tools set the benchmarks for the green building measures. For the construction thus to make them sustainable and to reduce the negative impacts on the environment. The points are awarded to the building based on the magnitude of adopted rating measures, thus the total score is achieved to the building after the appropriate weighting. This assist to deliver the various green rating measures in the building construction. A green building is one which optimizes water usage, optimizes energy efficiency, preserves natural resources, produces less waste and thus provides healthier zones for occupants when compared to the conventional building. Green Building is a design conceptualization that minimizes the environmental impinging of buildings.

Green building incorporates the usage of tidy, inexhaustible energy and efficient usage of natural resources and the usage of recycled or recyclable substances, thus to provide the healthy interiors. The advanced buildings fulfill the needs of artificial human comforts, just in return, have the excess energy and natural resources. On the reverse, Green buildings totalize different eco-friendly concepts and thereby increases the human working efficiency, thereby providing the luxuries with minimum costs. The analysis of the last two decades shows that, there is a significant evolution in the methodologies of rating system that reevaluate the building sector. The rating tool measures with the main focus in the design stage was developed in the beginning of 1990's. But, the actual construction was not so prior. At the beginning of

21ST Century, the rating tool measures shows rapidly increase in the real construction and a minimum focus in the building design. From 2006, the main focus on the green building has raised on the basis of sustainable performance. These performance trend has widened the entailment of sustainable buildings. Based on the parameter of orientation in direction to the construction level and sustainable development changes accordingly with the increasing weight of rating measures for the proper building performance and design. Thus, this leads to an efficacious on the future redundancy of the building sector. Leadership in Energy and Environmental vogue (LEED), Indian Green Building Council (IGBC) and Green Rating for Integrated Habitat Assessment (GRIHA) are the most recognized rating systems in the Indian green building industry. In this approach, the LEED India and GRIHA systems are likely in aims, process. Thus, framing to rate the building performance and to create the corresponding grade levels for the accreditation. Nevertheless, the sustainability rating system differs considerably, from the rating system of one to another long run of measurement of performance of the building, scope and environmental measure within the substructure sector.

II. OBJECTIVES

The Government have set the following immediate objectives for the Implementation of green building rating in the state. Green building techniques shall be implemented in Buildings which shall be classified into suitable groups based on the green rating. Since there are no existing mandatory directions for Governmental and nongovernmental organisations to Implement green building policy guide lines in buildings, the Rating has to cover both existing and new buildings. Priority shall be given to large buildings in urban and Semi urban areas with emphasis on retrofitting of existing Buildings. Conserve the natural resources, reducing the soil waste or zero discharge of waste, improved air and water quality, Protection of ecosystem and biodiversity thus mitigating the adverse impact of the built environment on human health. Establish a building system which relies on passive Architectural interventions in the building design, high Efficiency materials, and up-to-date engineering technology. By adopting these we aim to reduce the consumption of Electricity by 40 to 60% in these buildings as compared to The conventional buildings and water consumption by 40 to 80%.

On-site energy generation By using solar thermal panels and other sources of non- Conventional energy, the green buildings attempt to work Towards on-site energy generation. This can reduce the Dependence on power grid. By employing waste management strategies these Buildings aim to minimise the burden on municipal waste Management

facilities. Limiting the all kind of pollution during and after Construction is also aimed at to ensure reduced impact on Surrounding environment. These buildings ensure proper Safety health and sanitation facilities for labours and Occupants. Building Image: As Green Building are perceived as highly social responsible, Environment friendly and sustainable, they offer higher Image and by adopting the policy, Government aim to give a Face lift to the building sector under Government and thus Improve the image of the concerned department.

III. BUILDINGS

Single Family Residential building

A building should be regarded as residential building when more than half of the floor area is used for dwelling purposes. Residential buildings are divided into following types: Individual houses or private dwellings. Single residential unit means a building or portion of a building consisting of one principal dwelling unit only, and may include a secondary suite. Beauty, utility, durability – these are the immanent features of good architecture and should also be the distinguishing qualities of every residential building. Residential buildings are those in which at least a sleeping facility is provided for normal residential purposes, with or without cooking and dining facilities. The green rating of residential building is according to the rating that provided by the government.

Residential Building

An apartment, or flat, is a self-contained housing unit that occupies part of a building, generally on a single story. There are many names for these overall buildings, see below. It occupies only a part of a building. They may be owned by an owner-occupier or can be rented by tenants. Green building rating brings together a host of sustainable practices and solutions to reduce the environmental impacts. Green building design provides an integrated approach considering life cycle impacts of the resources used.

Industrial Buildings

Industrial building means a building or part thereof wherein products or material are fabricated, assembled or processed, such as assembly plants, laboratories, power plants, refineries, gas plants, mills, dairies and factories. There can also be pressurised air and water lines, high capacity exhaust systems, cranes and storage tanks. These type of industrial buildings are built to suit and rarely find alternative usage. The majority of industrial building superstructures are framed in

structural steel, although a small percentage are in precast concrete. Steel is used primarily for its large strength-to-weight ratio, enabling it to span large distances economically. Warehouses and Distribution Centres. These are large, single story spaces that are predominately used to store and distribute stock. Industrial architecture is the design and construction of buildings serving industry. Such buildings rose in importance with the Industrial Revolution, starting in Britain, and were some of the pioneering structures of modern architecture. It should have a sustainable design. The site, design, construction process, operation, and maintenance should be according to the benefits of nature. Building material is one of the major elements of a green building. Energy, water, and material used should follow the principle .

IV. GREEN BUILDINGS

Development of Green Homes and Green Buildings:

The Indian Scenario A green home is one that is ideally constructed with a smart design, and requires minimal maintenance. The overall harm to the environment is at a minimum and the residents remain healthy. In a country like India where the population is ever increasing, so are the demands. The demand for houses, shopping malls, hotels, commercial complexes etc. are on the rise. An emerging alternative is to go green in housing too. Indian Green Building Council (IGBC) promotes and regulates all activities connected with green buildings and green houses in India. According to the Planning Commission, India will need to generate at least 700000 MW of additional power by 2030 to meet growing electricity requirements, so it is the need of the hour to build energy efficient houses.

According to IGBC, “A green building is one which uses less water, optimizes energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building”. Green Homes is the first rating programme developed in India, exclusively for the residential sector. Based on accepted energy and environmental principles, it strikes a balance between known established practices and emerging concepts. The vision of IGBC is to enable sustainable built environment for all and enable India to be one of the global leaders in sustainable built environment by 2025.

Green Certification

Leadership In Energy and Environmental Vogue (LEED)

Projects go through a verification and review process by GBCI and are awarded points that correspond to a level of LEED certification: Certified (40-49 points), Silver (50-59 points), Gold (60-79 points) and Platinum (80+ points). LEED certification helps establish confidence and trust with third-party validation of environmentally responsible construction practices. Buildings that meet or exceed LEED requirements cost less to maintain and produce less waste. Features that improve indoor air quality and natural lighting attract tenants. LEED is the most widely used green building rating system in the world. Available for virtually all building types, LEED provides a framework for healthy, highly efficient, and cost-saving green buildings. LEED certified buildings reduce stress on the environment. They are more energy and resource-efficient. They generate less waste and lower the use of energy, water, and other resources. Points can be earned for storage and collection of recyclables, renewable energy use, and indoor water use reduction.

Indian Green Building Council (IGBC)

The Indian Green Building Council (IGBC) is a part of the Confederation of Indian Industry (CII). CII is a non-government, not-for-profit, industry-led and industry managed organisation that works to create and sustain an environment conducive to the development of India, partnering industry, government, and civil society, through advisory and consultative processes. The IGBC programme is voluntary and consensus based. It is primarily designed for new buildings to facilitate water and energy efficiency and efficient handling of waste. The rating system has been developed based on materials and technologies that are presently available. The rating system evaluates certain mandatory requirements and credit points using a prescriptive approach and others on a performance based approach. It has evolved to become comprehensive and user-friendly. The programme addresses national priorities and quality of life of occupants. Eco-friendly buildings not only help to create a better outdoor environment, but also build a healthier indoor environment. Natural and non-toxic building materials that are safe, environmentally friendly and sustainable are used. Architects and designers are creating buildings in new, creative ways and finding solutions to problems like construction waste, energy consumption and water waste. There are many things eco-friendly buildings are doing to reduce their carbon footprint. Though construction is costly, the money people spend initially could come back in the form of lower energy and water bills.

Using Solar Energy

More and more people are tapping into the unlimited solar energy for their homes and businesses. Solar power is becoming a positive energy source for those who are looking to reduce their carbon footprint. Solar energy is used not just on rooftops. Buildings are equipped with sensors that detect when a room is empty or when sunlight is adequate. In such cases, the sensors would trigger the lights to shut off. This technique is called solar harvesting. The skyscraper CIS Tower in Manchester, England is retrofitted with a façade of over 7,000 solar panels. In Chicago, the city's iconic Willis Tower (formerly the Sears Tower) installed photovoltaic glass panels to reduce the building's energy consumption. Many Indian states are planning to launch programmes to cover 300 government buildings with rooftop solar power projects after the success of such projects in Gujarat.

Green Rating for Integrated Habitat Assessment (GRIHA)

Tata Energy Research Institute (TERI) has developed GRIHA (Green Rating for Integrated Habitat Assessment), which was adopted as the national rating system for green buildings by the Government of India in 2007. This rating system has been adopted by the Ministry of New and Renewable Energy. This tool, by its qualitative and quantitative assessment criteria, is able to 'rate' a building on the degree of its 'greenness'. The system has been developed to help 'design and evaluate' new buildings (buildings that are still at the inception stage). A building is assessed based on its predicted performance over its entire life cycle – inception through operation. The stages of the life cycle that have been identified for evaluation are: pre- construction stage, building planning and construction stages, and building operation and maintenance stages. Association for Development and Research of Sustainable Habitats (ADaRSH) promotes GRIHA as a design and evaluation tool for green buildings and habitats. ADaRSH is an independent society for interaction on scientific and administrative issues related to sustainable habitats in India.

V. CONCLUSION

Green building is a holistic and sustainable approach to construction and design that aims to minimize environmental impact while maximizing resource efficiency and occupant comfort. In conclusion, green building is a vital strategy for addressing the increasingly prominent role in shaping the future of our built environment.

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