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Green Residency- A Contribution to Sustainable Development

M Akshatha Varshini R Naidu[*1], Jayant I Bhagodi[*2], Rachana C Gaikwad[*3], Neha V Kumavat*[4] , Mahesh Sarode*[5]

[*1,2,3,4] *BE Student, Civil Department, Dhole Patil College of Engg, Pune, Maharastra,* India
[*5] *Asst. Professor, Civil Department, Dhole Patil College of Engg, Pune, Maharastra, India*

Abstract
The With increased demand of Residential structures in recent scenario of increasing population. It has been a mandatory need to study about the proficient methods for safe and Environmental friendly because, Conventional Buildings are found to be, one of the biggest consumer of energy as well as biggest producer of greenhouse gases. So one of the best solutions to this is implementation of Green Features in our conventionalized world. Green Buildings are structures that buy in to the rule of upright treatment of regular assets, which means causing as pretty much nothing ecological impedance as could be expected, utilizing climate cordial materials, requires low operational energy, uses inexhaustible wellsprings of energy to satisfy its necessities, follows top caliber and life span as a rule for development and to wrap things up, should be financially feasible. But the issue is regular in non-industrial countries. This paper focuses on green design as an imperative change of contemporary design rehearsed in non-industrial countries. It attempts to present some ecological and actual plan approaches for green structures in expeditiously non-industrial nations primarily India, also the analysis of efficacious cases of environment friendly buildings in India.

Keywords: *Green Building, Sustainable Energy, Renewable, Green Bungalow, Costing, Green wall, Green Features.*

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I. INTRODUCTION

The Construction industry is a significant user of non-inexhaustible (non-renewable) assets and an enormous maker of waste, and the activity of structures is liable for around half of the all-out CO2 outflows.

The development misuses natural assets (resource) like woodland for lumber, lodging, and industry without appropriate control that adds to the ecological issues. The green building approach goes beyond reducing energy use or improving indoor air quality, it's actually about ad-dressing the whole system - not just the pieces. The approach towards this should be more comprehensive. The environmental change showed because of a worldwide temperature alteration has gotten basic around the world. High temperature, bountiful precipitation, and the ascent of ocean level are the markers of a dangerous atmospheric deviation which really is the result of the expansion in ozone-depleting substances that is greenhouse gases. Simultaneously with the new technologies constantly being developed, the current practice to compliment this is to create greener structures, the common objective being the design of green buildings to lessen the general effect of the fabricated climate on human wellbeing and the regular habitat by: Efficiently utilizing energy, water, and different assets Protecting inhabitant wellbeing and further developing representative usefulness Reducing waste, contamination, and natural corruption.

II. LITERATURE REVIEW

2.1 Review: 1

Roodman and Lenssen has given a view on "**Ecology of building materials**" has given an elaborate overview of conventional, offset and alternative to conventional building. His paper concludes & focuses on green design as a vital transformation of contemporary architecture practiced in developing nations.

2.2 Review: 2

Wong, J.K.W. and Zhou, J has listed their respective views, in this paper we can see an interesting cover on an Enhancing environmental sustainability over building life cycles through the practical usage of green BIM technology for the sustainable benevolence.

2.3 Review: 3

Davis Langdon has given Cost and benefits of achieving green building in this paper the comparison of green

building with conventional building with respect to economy is studied with the help of suitable case study. It also includes study of existing green building, by carrying out survey with respect to energy saving, operating cost, saving in electricity water, to study of IEQ etc. This study also helpful to reduce the wastage, to maintain healthy and safe to the environment.

2.4 Review: 4

Pulselli RM, & Simoncini E has conducted and concluded Sustainable building material for green building construction, conservation and refurbishing The purpose of this paper is to highlight how sustainable building material can contribute to lessen the impact of environmental degradation, and generate healthy buildings which can be sustainable to the occupant as well as our environment.

2.5 Review: 5

Alexander and Christopher gave light on materials, on Green Building Materials and their Common Use in Everyday Life and their detailed uses in our day-to-day life.

2.6 Review: 6

Davis Langdon has studied on Cost of Green Revisited Various studies have been performed on cost impacts and impact parameters in Green Buildings against the conventional ones.

2.7 Review: 7

Ailawadi et al proves Energy sector in India particularly power sector faces number of issues and problems and they are: shortage of power due to excess demand over supply caused by industrialization, urbanization, mechanization and modernization.

2.8 Review: 8

Hi Sun Choi and Leonard Joseph has given "Access to energy services by the poor in India", Current situation and need for alternative strategies.

III. METHODOLOGY

3.1 STUDY OF A GREEN BUILDING

3.1.1 What is a Green Building?

A Green Building is one that utilizes less water, streamlines energy productivity, saves regular assets, creates less waste and gives better spaces to inhabitants, when contrasted with a traditional structure Core-divider framework.

3.1.2 Factors of A Green Building

- Renewable energy
- Rainwater harvesting
- Waste water management.

3.1.3 Green Building Features

Eco-Friendly-by least aggravation to the eco framework. Energy proficient through the normal lighting ventilation and sun based inactive plans effective utilization of water-through reusing and water reaping utilization of environmentally friendly power through photograph voltaic frameworks and close planetary system and so on poisonous material in entryway climate, utilization of reuse/recyclable materials, effective waste usage and removal.

3.1.4 Environmental Benefits

The study and the research work done up to today have strong evidence about the numerous benefits associated with the green buildings. Keeping in mind the environmental perspective, a sustainable structure helps improving urban biodiversity and protects the eco system by the means of sustainable land use. Also, reduction of construction and demolition waste is one of the important components of the sustainable building design.

3.2 COMPONENTS OF SUSTAINABLE BUNGALOW

3.2.1 Solar Energy

Solar energy is radiant light and heat from sun harnessed using a range of ever-evolving technologies such as solar heating, solar photovoltaic, solar thermal energy, solar architecture and artificial photosynthesis It is a significant wellspring of environmentally friendly power and its advances are extensively portrayed as either latent sun based or dynamic sun based relying upon the manner in which they catch and circulate sun based energy or convert it into sun based force.

3.2.2 Green Roof

A green roof or living roof is a roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. It might likewise incorporate extra layers like a root hindrance and waste and water system frameworks

3.2.3 Green Wall

A green wall is a wall partially or completely covered with greenery that includes a growing medium, such as soil or a substrate. Most green walls also feature an integrated water delivery system. A green wall is also known as a living wall or vertical garden. It provides insulation to keep the buildings inside temperature consistent.

3.2.4 Water Treatment Plant

Water treatment is the interaction that works on the nature of water to make it more satisfactory for a particular end-use. The end use might be drinking, mechanical water supply, water system, stream upkeep, water amusement or numerous different uses, including being securely gotten back to the climate. Water treatment removes contaminants and undesirable components, or reduces their concentration so that the water becomes fit for its desired end-use.

3.2.5 Biogas Plant

Biomass resources such as cattle dung, agriculture wastes and other organic wastes have been one of the main energy sources for the mankind since the dawn of civilization

Figure 1: Components of Sustainable Bungalow

3.3 PLANING OF THE RESIDENCY

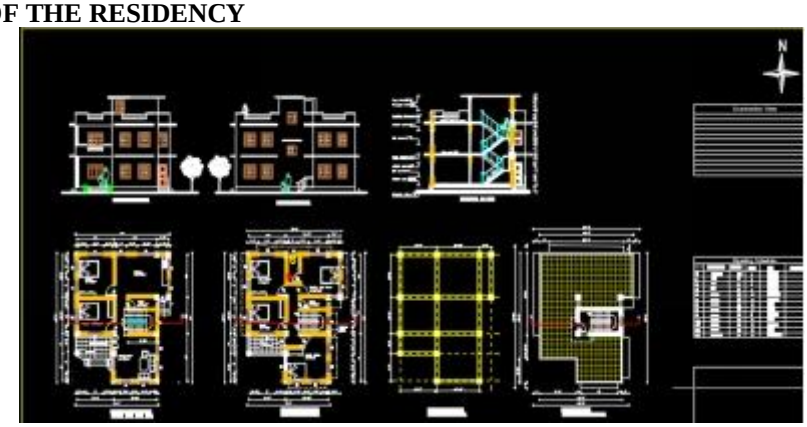

Figure 2: Detailed Plan of a Green Bungalow

3.4 ADVANTAGES OF GREEN HOUSING

- Low Maintenance and Operation Cost.
- Energy Efficiency.
- Enhances Indoor Environment Quality.
- Water Efficiency.
- Better Health.
- Material Efficiency.

- Better Environment.
- Reduces Strain on Local Resources.

3.5 ESTIMATION OF A GREEN BUNGALOW

- Total plot area: -1194ft^2
- Total built up area: - 996ft^2
- Cost of the project: - 15.579 Lakh

In our case the area of ground floor as well as the area of first floor is same, the room sizes are as follows,

- Living Room-13'4"X13'3",
- Kitchen-16'10"X12',
- Bed1- 11'x12'6",
- Bed2-11'7"x10'
- Therefore, the cost of the Green Building sums for **Rs. 11,54,000**
- The normal usage of electricity in an average Indian home is 90kWh/month.
- When using the Green features in additional to the conventional set can go up to 1-2kWh/Sq.ft-year. Therefore, for the area of 1154Sq.ft the units go for 1731kWh/year and 14.45kWh/month
- The cost of the Electricity after solar panel installation sums for Rs. 3,50000 to Rs. 4,50000.
- Hence the cost of the Green Bungalow cost to Rs. 15,57,900
- **The cost of the Green bungalow is Rs.1350/Sq.ft**

IV. CONCLUSION

Our regular habitat makes human existence conceivable, and our social climate characterizes what our identity is. It is accordingly fundamental that our populace and financial development are earth feasible. Subsequently every single one should in general move towards Green rendition of home.

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