

Green Building Material: Eco Friendly Aspects in Residential Project, Tamilnadu.

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Abstract- Green building materials are main factor when it comes to Eco homes. This paper focuses suggesting eco friendly green material for a residential project and its importance. It helps in optimizing 15-20% of total running cost on electricity, by enhancing micro climate, use of more naturally available local material with respect to climate. As a result of bringing in fewer toxins to environment, reduced carbon emission homes and sustainable living.

Keywords- Green material, Eco home, Sustainable construction, Green Practices.

I. INTRODUCTION

The aspect of green building includes various characteristics, amongst all the Material and Resources place the vital role in making a sustainable green building. When it comes to an Eco home design it is essential to explore locally available ecofriendly material for construction. This study focuses on theoretical aspects in showcasing the characteristics, availability, market price, benefits of construction material on different trades in residential project.

Affordable housing or low cost housing is the prime search these days. Green building is the only solution that improves human health thereby improving productivity for long run at lesser investment.

SUSTAINABLE BUILDINGS – A NEW ‘GREEN REVOLUTION’ FOR TOMORROW’S INDIA

The construction industry plays a significant role in economic growth, although new technologies are constantly being developed to complement current practices in creating greener structures, the common objective of green buildings is to reduce the overall impact of the built environment on human health and the natural environment by:

- Protecting occupant health and improving productivity
- Reducing waste, pollution and environmental degradation.

1. Global Scenario:

Senario-1

According To Statistical Analysis Report:

Sales in the residential sector recorded a 25% year-on-year increase in the top cities in 2019.

“To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025”.

From business world news: Ever increasing housing demand

- By 2050- expected rise in population to 1.6 billion.
- It is expected that more than 60% of a much larger population will live in urban areas in 2050.
- Govt. events-to ensure universal housing-100 Smart Cities Mission, Housing for All, Atal Mission for Urban Rejuvenation and Transformation (AMRUT), PMAY-Housing for All by 2022.
- Construction GDP is almost 8%of overall GDP of the country.

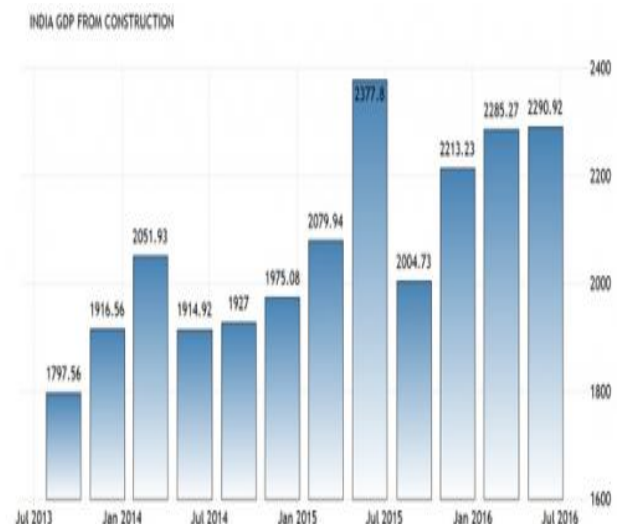


Fig 1. Contribution of construction industry in India’s GDP (2013-2016). Source: Central Statistical Organisation).

Global Real Estate Transparency Index, 2018: released by JLL

INDIA RANKS 35TH PLACE AMONG 100 COUNTRIES: Semi-transparent

India has moved up one place due to improvement in market fundamentals, policy reforms, and liberalization of FDI. Besides, digitization of property records and industry status accorded to affordable housing also has helped India to improve its rankings.

India has emerged as one of the top ten countries to register maximum improvement in transparency in real estate over the last two years. Chennai had the highest percentage of completed unsold inventory at close to 20 per cent. As per the report of the technical group on urban housing shortage in India (2012-17) India needs 18.8 million housing units in the cities alone, out of which more than 95% are in the EWS/LIG Categories.

<https://timesofindia.indiatimes.com/business/india-business/real-estate-market-makes-a-strong-comeback-in-2018/articleshow/65345303.cms>

Scenario-2

What Is The Problem Being Investigated?

- Construction leads to a lot of waste.
 - A study done by Jawaharlal Nehru National Urban Renewal Mission estimates that construction industry in India, annually generates about 10-12 million tons of waste. (Bricks, tiles wood, metal, etc.)
 - construction & demolition waste -50% concrete and masonry waste- action required-3R (reduce, reuse, recycle)
 - material selection should include
 - Low cost –Locally available.
 - High levels of adaptability, sustainability.
 - Less CO2 emission to Reduce GWP (global warming potential)
 - Life cycle analysis (LCA)
- [Http://www.eai.in/wp-content/uploads/2014/02/green-buildings-1-lac.jpg](http://www.eai.in/wp-content/uploads/2014/02/green-buildings-1-lac.jpg)

III. AMALGAMATION OF MATERIAL USED

1. Selection of Materials:

The selection of materials depends on various trades and costs in construction.

- 1.1 Foundation-** Generally made using hard natural stone (karungal).
- 1.2 Flooring-** terracotta tiles, Red oxide flooring, Athangudi tile, Cement flooring, are practiced with respect to sustainable material choice low cost.
- 1.3 Roofing-** Madras terrace concepts, Ribbed/Curved terracotta ceiling using clay pots, Filler slabs, bricks are used with less use of steel for reinforcement.
- 1.4 Wall-** Walls can breathe so making it simple and breathable is important while designing a wall. CSEB,

Fly ash brick, Regular Burnt clay brick with plastering combination of egg white, shell powder, gallnut, jaggery, lime mortar, spices, kadukkai as bonding agent and vegetable dyes for coloring.

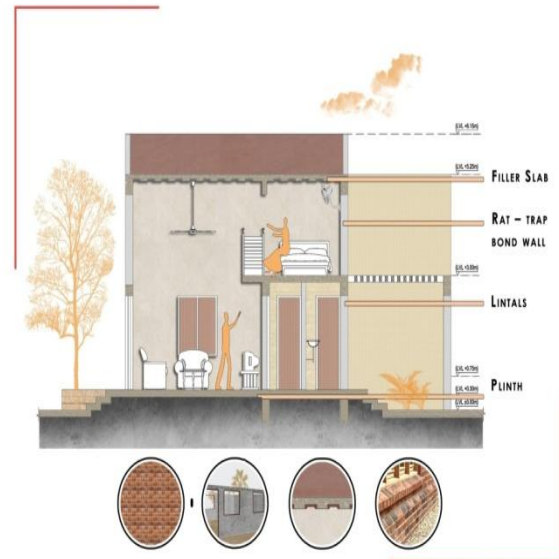


Fig 2. various trades

2. Planning:

Construction techniques like Rat trap bond, Rammed earth, light shelves, courtyard planning, solarium, allowing more ventilation/cross ventilation method, Filler slab, Timber frames, Usage of natural stone, Rain water harvesting system, Adopt more landscaped surface including vegetated roofing ideas.

Choice of material is mainly based on local availability, transportation cost and its sustainable nature. Waste reduction by reusing of material like doors windows, wooden furniture's, lamps, kadappa stone, pillars made of wood or stone, which helps in reducing the overall cost in the project.

IV. OBSERVATION

From various case examples of green residence in Tamilnadu it is proved that Green Practices are generally carryout in order to enhance the environmental sustainability.

Materials like bamboo, jute, low voc paints, wood, straw bales, Coconut products, recycled wood/rubber/carpet/plastics/other sustainable content can be used as an alternative to contemporary material. Basically all such materials reduces carbon footprint and increases human health and comfort.

Selection of material is also based on the climatic condition and the client need.

V. CONCLUSION

Adapting green concepts and selecting right green material for each trade definitely increases the building life span and creates less impact to environment. Choosing right sustainable material and construction techniques cuts down the cost and helps in achieving maximum profit out of residential projects.

REFERENCE

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