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Eco-Friendly Building Materials and Their Utilization

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Abstract

- *Eco-friendly is the act of living with purpose. The purpose is focused on not creating harmful to environment.*
- *There is various technique and materials produce by various research organized by innovators and manufactures in India useful in the housing construction.*
- *The eco-friendly building materials response from wwwbuilding sector which is purposeful to reduce the environment cost of making eco-friendly building.*

In the construction world selection of sustainable structural materials, during designing phase leads to move towards more sustainable construction. Hence there is need to select more eco-friendly materials for building for construction

Now a days sustainability & living in building , environment has taken place around us. To design this eco-friendly building we have to follow various methods, specifications, guidelines. Necessity of Eco-friendly housing Evidence is growing that sustainable buildings provide financial rewards for building owners, operators, and occupants. Sustainable buildings typically have lower annual costs for energy, water, maintenance, and another operating expenses.

These reduced costs do not have to come at the expense of higher first costs. Through integrated design and innovative use of eco-friendly materials and equipment, the first cost of a sustainable building can be the same as, or lower than, that of a traditional building. Some sustainable design features have higher first costs, but the payback period for the incremental investment often is short and the lifecycle cost typically lower than the cost of more traditional buildings.

In addition to direct cost savings, eco- friendly buildings can provide indirect economic benefits to both the building owner and society. For instance, eco- friendly sustainable building features can promote better health, comfort and well-being, and productivity of building occupants, which can reduce levels of absenteeism and rise productivity. These features can offer owners economic benefits from lower risks, longer building lifetimes, improved ability to attract new employees, reduced expenses for dealing with complaints, less time and lower costs for project, resulting from community acceptance and support for sustainable projects, and increased asset value.

KEYWORDS*: Building, Ecological Design, Eco-Friendly,* Sustainable Development, Green Architecture

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I. Introduction

- What is mean by eco-friendly technology?
- This technology involved making use of another energy source which is abended to renewable energy, this reduces amount of resource which limited used through conventional like fossil fuel.
- In the industry, selection of sustainable materials which is used for construction during the period of design leads to move towards more sustainable construction.
- Hence, there is a need to select more eco-friendly building materials has been used for construction.

Background

- Many people are building or constructing their houses by choosing eco-friendly building materials. Eco-friendly building material is one that increases the efficiency of energy used and reduces the impact on human beings and the environment. In the past.
- Eco-friendly system had higher sustainable score than the conventional system for all sustainable factors
- The bigger differ in the sustainable score between two system that eco- friendly and conventional is about 42% in the recyclability factor.

Role of eco-friendly materials

There are eco-friendly materials develops a sustainable environment and reduces the amount of waste produce on land and also in water.

QUESTION- what are some eco-friendly materials used in architecture and their impact on environment?

Sources of materials-

There are two main sources are as follow as –

- renewable source – wood, teak, timber etc
- Reuse of waste – by the process of recycling reusing the used product like door windows etc.

Materials selection criteria: –

- **Indoor air quality –** it acts by utilizing materials of low minimum chemical emission & moisture resistant
- **Water conservation –** The materials those are help us & conserve water like in landscape areas are mostly preferred to be used or which help to reduce water consumptions in building materials.
- **Affordability –** when building products & their life cycle cost are comparable to conventional materials or as an eco-friendly building material define within a project percentage of overall budget.

Some of eco-friendly building materials use in India –

BRICKS STABILIZED-

- Compressed earth blocks
- Fly ashes lime gypsum bricks
- Clay fly ash burnt bricks

ROOFING MATERIALS-

- Bamboo mat corrugated sheets
- Ferro cement roofing
- Roofing sheets which are pre-cast walling roofing

BOARD & PANNELS-

- Ferro cement wall panel
- Coir cement board
- Pre- cast concrete L-panel
- Fibre reinforced wall panel

GREEN CONCRETE –

- Green concrete is invented to develop sustainability in environment. it made by recycled process of waste materials such as mining waste, glass wastes, mud wastes, sawdust, burnt clay, etc.
- It increases the entire construction life cycle, including structural design, parameters, maintenance.
- It reduces the emission of co2 in the atmosphere.

POROTHERM BRICKS -AN ECO-FRIENDLY MATERIALS

- It is made up of clay mixed with other natural products like rice ash husk, sawdust, coal ash, etc
- *Porotherm* hollow bricks are hollow from the inside, which makes them lightweight. Even so, they are more durable than conventional bricks.
- Some of their features include light-weight, low water absorption, fire-proof, and thermally insulated. porotherm bricks have a life span that lasts more than 150 years.
- This building material allows for substantial savings as it is low-priced

BAMBOO AN ECO-FRIENDLY MATERIAL-

- Bamboo has been used as a building material. It is a second option material to wood and, in recent times, has also been preferred more often due to the scarcity of timber. Bamboo has regenerative properties.
- Due to its hard-wearing nature and low cost, it is used in the construction.
- Bamboo mat corrugated sheets are often used as a substitute for plastic, asbestos, and corrugated metal used for roofing purposes.
- Bamboo roofing sheets are *eco-friendly material* and have a high tolerance to weathering conditions.
- They are also easy to install.

II. Conclusion

- The variety of green building material available with subcontinent of India. That can be replaced from convectional building material at different stages of construction of building.
- The use of eco-friendly building material instead of convectional materials & techniques are less harmful for surrounding.

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