Review Paper on Study and Analysis on Low-Cost Housing

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Abstract –

Studying and analyzing low-cost housing involves examining various aspects such as design, construction materials, location, affordability, sustainability, and social impact. Here's a breakdown of some key considerations:

1. **Design**: Low-cost housing often requires innovative designs that maximize space utilization while minimizing costs. This may include modular construction, tiny homes, or efficient layouts that reduce the need for excessive materials.
2. **Construction Materials**: The choice of materials significantly impacts the cost of housing. Analyzing alternative, locally-sourced materials that are both affordable and durable is essential. This might involve using materials like bamboo, recycled materials, or compressed earth blocks.
3. **Location**: The location of low-cost housing projects is crucial for accessibility to job opportunities, transportation, and essential services. Analyzing the availability of land and infrastructure in suitable locations can influence the feasibility of such projects.
4. **Affordability**: True low-cost housing must be affordable not only in terms of initial construction but also in terms of ongoing maintenance and utilities. Analyzing the total cost of ownership over time is essential to ensure that housing remains accessible to its intended occupants.
5. **Sustainability**: Sustainable practices should be integrated into low-cost housing projects to minimize environmental impact and reduce ongoing costs. This may involve energy-efficient design, renewable energy sources, water conservation, and waste management strategies.
6. **Social Impact**: Low-cost housing projects should consider the social impact on communities, including issues like inclusivity, community engagement, and empowerment of residents. Analyzing the social dynamics and potential benefits

***Key Words*:** Affordability, Construction material , House technique , Urbon Planning ,

1.INTRODUCTION

Low-cost housing refers to affordable housing solutions designed to meet the needs of people with limited financial resources. These projects often focus on providing decent living conditions, basic amenities, and sustainable construction methods at a reduced cost. They play a crucial role in addressing housing shortages and improving living standards for low-income individuals and families and also government schemes like

PRADHAN MANTRI AWAS YOJANA

Pradhan Mantri Awas Yojana (PMAY) is a credit-linked subsidy scheme by the Government of India to facilitate access to affordable housing for the low and moderate-income residents of the country. Pradhan Mantri Awas Yojana (Urban) (PMAY-U) for the urban poor and Pradhan Mantri Awaas Yojana (Gramin)[3] (PMAY-G and also PMAY-R) for the rural poor, the former administered by Ministry of Housing and Urban Affairs and the latter by Ministry of Rural Developments.

SHABARI ADIVASI GHARKUL YOJANA

a permanent Gharkul with an area of 269 sq. Ft. Has been provided for the beneficiaries of Scheduled Tribes in the tribal areas as well as for the citizens of Scheduled Tribes in the tribal grand area. The Main Objective of Shabari Adivasi modern construction technique and materials which could lead to economic solutions. As the cost of construction is has gone beyond the limits of affordability for low income groups as well as large section of middle income group.,

Gharkul Yojana is to provide permanent houses to the Scheduled Tribes of the State who do not have permanent

houses of their own. This scheme is to **provide permanent shelter to the tribal people living in mud houses, slums and temporary shelters. Sabari Adivasi Gharkul Yojana Maharashtra**

2. REVIEW ON LOW COST BUILDING

1.VivanW.Y.Tam (2011) carried out study on cost effective of using low cost housing Technologies in construction, it is observed that construction methods of foundation, walling, roofing and lintel are compared. Strength and durability, safety and mental satisfaction are factors that assume top priority during cost reduction. It is found that about 26.11% and 22.68% of the building cost can be saved by consuming low cost housing technologies in assessment with the traditional construction methods

Jain and Paliwal (2012) author focuses on the need to adopt the cost-effective construction methods by using locally available materials or by the up-gradation of the conventional construction technologies and by applying

3 .METHODOLOGY

Excavation
P.C.C
FOUNDATION
EARTH FILLING / BACK FILLING
WALLING
ROUFFING
PLASTERING
FLOORING
DOOR &WINDOW
PLUMBING
PAINTING

3.1 Excavation

Excavation for home projects usually involves digging for foundations, basements, or utility lines. It's a crucial step in construction to ensure a solid and safe structure.

3.2 PCC

Using plain cement concrete (PCC) is a common and cost-effective approach for housing foundations and floors, especially in low-cost housing projects. It's a simple mix of cement, sand, and aggregate. The key is to ensure proper proportions and good compaction during pouring to create a strong and durable foundation

3, Foundation:

- The foundation is the structural base upon which the entire building rests. For low-cost housing, common foundation types include strip foundations or pad foundations, which are typically made of reinforced concrete. The foundation transfers the load of the building to the soil beneath, providing stability and support.

4, Earth Filling / Back Filling:

- After the foundation is laid, earth filling or backfilling is done around the foundation walls to provide support and stability. This involves filling the excavated trenches and spaces around the foundation with compacted soil or suitable fill material. Proper compaction is essential to prevent settling and ensure the structural integrity of the foundation.

5,Walling:

- Walling involves constructing the walls of the building using various materials such as, bricks. In low-cost housing, lightweight and cost-effective materials may be preferred, soil bricks. Walls provide structural support, divide interior spaces, and serve as barriers against weather and external elements.

6,Roofing:

- Roofing is the process of installing the roof structure and covering to protect the building from rain, wind, and other environmental factors. Common roofing materials for low-cost housing include corrugated metal sheets, asphalt shingles . Roof design should consider factors such as slope, insulation, and ventilation to ensure durability and energy efficiency.

7,Plastering:

- Plastering involves applying a layer of plaster or mortar to the interior and exterior walls to create a smooth and uniform surface. Plastering helps to conceal imperfections, improve aesthetics, and protect the walls from moisture and damage. In low-cost housing, plastering may be done using cement-sand mortar or gypsum-based plaster.

8, Flooring:

- Flooring refers to the surface material installed on the ground level of the building. Common flooring options for low-cost housing ceramic tiles, vinyl flooring, or laminate flooring. Flooring materials should be durable, easy to clean, and cost-effective while meeting aesthetic and functional requirements.

09.Door & Window Installation:

Door and window installation involves fitting doors, windows, and frames into the openings in the walls. Doors provide access to interior spaces, while windows allow natural light and ventilation. In low-cost housing, doors and windows may be made of wood, metal, or PVC, depending on cost, durability, and local climate conditions.

10.Plumbing Fixtures and Materials:

- Select plumbing fixtures and materials that are affordable, readily available, and suitable for the local climate and environmental conditions.
- Use durable and corrosion-resistant materials such as PVC, copper, or stainless steel for pipes, fittings, and fixtures to ensure longevity and minimize maintenance costs over time.

11.Painting:

- Painting involves applying paint or protective coatings to the interior and exterior surfaces of the building to enhance aesthetics and provide protection against weathering and deterioration. In low-cost housing, painting may involve simple color schemes and economical paint options to minimize costs while achieving a clean and attractive finish.

Conclusion

The dream of owning a house particularly for low-income and middle- income families is becoming a difficult reality. It is necessary to adopt cost effective, innovative and environment-friendly housing technologies for the construction. This paper examined the cost effectiveness of using low cost housing technologies in comparison with the traditional construction methods. Two case studies in India were conducted. It was found that about 26.11% and 22.68% of the construction cost, including material and labor cost, can be saved by using the low cost housing technologies in comparison with the traditional construction methods for walling and roofing respectively. This proves the benefits and the trends for implementing low cost housing technologies in the industry.

References

[1] Vivian W.Y. Tam, “Cost Effectiveness of using Low Cost Housing Technologies in Construction”, ELSEVIER, Procedia Engineering 14, 156-160, 2011.

[2] A.K. Jain and M.C. Paliwal, “Adoption of Appropriate and Cost Effective Technologies in Housing: Indian Experience”, World Academy of Science, Engineering and Technology, Vol. 6, 169-171, 2012.

[3] F.Paceco torgal, Said jalai, (2012), “Construction & building materials, Construction & building materials”, 29, pp-512-519.

[4] R.caponette& G. De Francisc, (2013) “Ecological materials & technologies in low cost building”

[5] SenguptaNilanjan& Roy Souuvanic ,(2013), “Study of Appropriateness of cost effective building construction technologies in India”, jr.ArchitEng Tech.

[6] Swathikchowdhury, SangeetaRoy,(2013)“Prospects of low cost housing in India”,Geomaterials, pp-60-65

[7] Tomas U Ganiron& Mohammed Almaewae, (2014) “Prefabricated Technology in a modular house”, Int. Jr of Advanced Sci& Tech, Vol-73, pp-51-74

[8] Vivian W.Y.Tam , (2011), “Cost effectiveness of using low cost housing technologies in construction