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## International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

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# Easy Economical and Removable Building Construction

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**ABSTRACT:** Portable and relocatable building are economical, easy to construction, can be moves to Different location.

### PORTABLE BUILDING

These prefabricated structure are build in a factory and then transported to the desired location . They are designed to be quick to assemble and disassemble, and can be used for a variety of purposes, such as offices, storage units, or temporary housing.

### RELOCATABLE BUILDINGS

These buildings are constructed in a manufacturing facility and can be partially or completely assembled. They are designed to be reused or repurposed and can be transported to different locations are often used for schools, construction site office and medical clinics.

Low-cost housing is a unique approach that focuses on optimizing construction expenses by utilizing cost-effective techniques and readily available materials while incorporating advanced technologies and skills. This is achieved without compromising the strength, durability, or functionality of the structure. A common misconception is that low-cost housing is only suitable for substandard projects and relies on inferior-quality materials. However, the reality is that cost reduction is primarily accomplished through efficient resource management.

Affordability is further enhanced by deferring finishing work or executing it in stages. Cost efficiency is achieved through the selection of high-performance materials or improved structural designs. The use of low-cost construction materials in housing projects enables lower-income groups to access quality buildings.

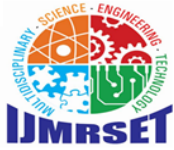
The benefits of using such materials include reducing pollution, conserving energy, utilizing natural and locally available resources, improving energy efficiency, and ensuring the use of non-toxic materials. Additionally, low-cost housing materials contribute to longevity, durability, ease of maintenance, recyclability, reusability, and biodegradability. This paper presents various reviews on cost-effective building designs and management strategies.

## I. INTRODUCTION

Low-cost housing can be achieved through efficient planning, effective project management, affordable materials, cost-saving construction techniques, and alternative building methods. The savings generated from these approaches help reduce construction expenses, making affordable housing accessible to a wider population. The term "affordable housing" refers to residences that are financially feasible for lower- and middle-income groups.

The demand for low-cost housing continues to rise, mainly due to increasing urbanization. The choice of construction materials should align with local conditions to enhance living standards by developing innovative structures or





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improving existing ones. Sustainable urban housing aims to introduce new strategies for managing human settlements while addressing energy and environmental concerns.

Achieving sustainability in housing projects requires balancing environmental, economic, and social factors with technical considerations. Research indicates that approximately 60% of the total expenditure on low-income housing projects is attributed to engineering and construction materials. Additionally, walls contribute up to 50% of total material costs and account for nearly 45% of the overall construction time. Factors such as material sourcing, manufacturing techniques, and labor needs significantly influence the selection of wall construction materials.

The primary goal of this paper is to provide a comprehensive review of cost-effective housing design, planning, material selection, and construction techniques.

### II. LITERATURE REVIEW

Vivan W.Y. Tam (2011) conducted a study on the cost-effectiveness of implementing low-cost housing technologies in construction. The research compared various construction techniques, including foundation, walling, roofing, and lintel methods. Key factors such as strength, durability, safety, and overall satisfaction were identified as top priorities in cost reduction efforts. The findings revealed that utilizing low-cost housing technologies, as opposed to traditional construction methods, could result in savings of approximately 26.11% and 22.68% of the total building cost.

Kuo-Liang Lin (2011) carried out research on human resource allocation for construction projects in remote areas. The study observed that firms managing distant project sites must choose between deploying their permanent staff or hiring temporary local workers. This paper introduces a decision-making framework for human resource distribution in remote construction projects. The case study findings suggest that experienced project administrators, who can minimize managerial inefficiencies and reduce project-related losses, are preferred over locally hired employees.

F. Pacheco Torgal et al. (2012) conducted a study on earth-based construction and building materials. The research highlights that earth construction is widely utilized in less developed nations. However, the increasing adoption of conventional construction techniques, such as reinforced concrete and fired bricks, may contribute to a shift toward unsustainable design practices. To emphasize the significance of earth construction, this paper reviews its environmental advantages, including reduced consumption of non-renewable resources, lower waste production, decreased energy usage, minimized carbon dioxide emissions, and improved indoor air quality.

Tomas U. Ganiron et al. (2014) carried out a study on prefabricated technology in modular housing. The research indicates that prefabricated components significantly impact construction costs compared to traditional building methods. This cost-effectiveness is attributed to the efficiency of materials, streamlined processes, and shorter construction timelines, making prefabrication a viable alternative to conventional techniques.

Swaptik Chowdhury et al. (2013) conducted a study on the potential of low-cost housing in India. The research examined alternative construction materials, particularly natural resources such as bamboo, straw, bagasse-cement boards and panels, bagasse-PVC boards, Coir-CNSL boards, jute-coir composites, coconut and wooden chip roofing materials. Additionally, manmade materials like fly ash, aerocon panels, ferrocement, and rice husk were analyzed for their suitability as alternative building materials. The study highlights the potential of these materials for cost-effective construction.

R. Caponetto et al. (2013) explored ecological materials and technologies for low-cost building systems. The study emphasizes the high recyclability of natural materials, which, when combined with construction techniques that utilize bioclimatic architectural principles, can support sustainable and energy-efficient housing. Furthermore, a specialized block was designed to fulfill sustainability requirements and facilitate easier construction.

Sengupta Nilanjan et al. (2013) carried out research on the suitability of cost-effective building construction techniques. The study assessed the acceptance and adaptability of various low-cost construction methods through field surveys,



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literature reviews, and technical evaluations. The objective was to identify the most suitable technique among the available options.

Mohannad Sharif Zami et al. (2010) investigated the economic advantages of modern earth-based construction for affordable urban housing. The study highlights that stabilized earth has been a viable building material across different continents and historical periods. This paper discusses the financial benefits of using earth as a construction material and examines the relevant building techniques for providing housing solutions in developing countries.

John M. Hutcheson (2011) conducted research on project management in low-cost housing for developing nations. The study covered aspects such as design, cost management systems, communication, contract regulations, and planning. By analyzing the challenges discussed in the paper, the study concluded that simplifying designs, addressing insufficient local support, and ensuring comprehensive pre-planning are crucial. Additionally, the findings emphasized the necessity of assembling well-structured, self-sufficient teams composed of multidisciplinary professionals and sub-professionals to improve project execution.

Wuagwu Ben Ugochukwu et al. (2015) investigated the use of local building materials in construction. The research identified inadequate housing as a significant obstacle to sustainable urban expansion and city development. It highlighted that utilizing recycled materials extensively contributes to resource conservation and environmental preservation. The study also noted that green building waste management promotes energy and resource efficiency, while sourcing materials locally helps minimize costs and reduces pollution caused by transportation.

David William Dobson et al. (2013) explored sustainable construction practices. The study aimed to determine whether the construction industry perceives sustainability as an additional expense and to assess whether adopting eco-friendly building techniques can lead to cost savings by decreasing carbon emissions and operational expenses. Through a literature review and an industry-wide survey, the study provided insights into how integrating sustainability into modern buildings can significantly lower utility and maintenance costs after construction is completed.

Bredenoord J. (2016) examined sustainable housing and building materials for low-income households. The study found that achieving sustainability in affordable housing is feasible. It emphasized that physical aspects of neighborhood development, such as urban density and connectivity, are just as vital as community-oriented initiatives. The research concluded that supporting community-driven organizations, small housing cooperatives, and self-built housing efforts is essential. Proper design, social structuring, and organized support systems are fundamental requirements for ensuring sustainability in incremental housing projects.

B. Bakhtyar et al. (2009) conducted a study on the low-cost housing process in Malaysia, revealing that achieving a balance between the financial constraints of low-income groups and the profitability of developers is crucial to increasing the availability of affordable housing in the country.

Dhiraj B. Tapkir et al. (2012) examined cost-effective housing through construction techniques, identifying time, materials, and construction methods as the primary cost-determining factors. The paper explores various approaches to cost management and reduction in affordable housing.

Ali Haider Jasvi et al. (2015) explored the sustainable utilization of low-cost building materials in rural settings, highlighting the challenge of integrating these materials into structural elements for economical housing. The study assesses technical, social, ecological, and physical influences on construction materials while emphasizing the need for affordable housing in rural India. It discusses various material applications and building techniques suited for low-income groups and urban poor populations, promoting the use of locally sourced materials to minimize costs and enhance affordability.



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### III. METHODOLOGY

The construction methodology or execution planning service will be provided in accordance with contract requirements. The level I works master schedule will be based on the tender scheme program and will be submitted initially after the contact award.

Project control is required for the following documentation.

- Shop drawing preparation.
- Material procurement.
- Arranging subcontractors.
- Industrial material building component of site

### IV. CONCLUSION

Housing is a fundamental necessity for human beings, providing safety, security, self-worth, social standing, cultural identity, fulfilment, and accomplishment. After evaluating different approaches to low-cost construction systems, the most effective strategy involves utilizing natural and renewable materials, incorporating environmentally friendly building resources, making use of locally available materials, and optimizing resource allocation. Additionally, implementing innovative techniques can help lower construction costs while promoting sustainability and the development of eco-friendly, green buildings.

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