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# Prefabricated Wall Panels Using Red Soil for Low-cost Housing – A Review

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## ABSTRACT

*Natural resources are being heavily exploited to generate traditional building materials like bricks, cement, and reinforcing bars as a result of the growing population. This causes an exponential rise in their pricing while also harming the environment by producing a lot of greenhouse gases. Therefore, creating affordable and long-lasting infrastructure is necessary. In this work, a prefabricated fibre-reinforced wall panel made of red soil that is advantageous for affordable housing is presented as an alternative sustainable infrastructure component. Strength study, cost estimation, and environmental effect analysis were all done for these panels in order to assess their potential in the building business. In comparison to brick partition walls, it was found that these walls are stronger, lighter, and more affordable.*

*Keywords: Prefabricated, Wall panel, Low-cost housing, Red soil, Fibre reinforced*

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## I. INTRODUCTION

Even if industrialization began a century ago, humanity still isn't able to offer shelter to everyone. Millions of people globally, particularly in emerging nations, lack housing, and the situation is at an alarming level. According to the Ministry of Housing and Urban Poverty Alleviation's assessment, the country of India itself has an estimated 18.78 million housing deficit at the start of the 12th Five Year Plan (2012–17). Natural resources are already being heavily exploited because to the ever-increasing population, which has significantly raised the cost of conventional building materials. Thousands of people globally are homeless and live on or near the impoverished level. This puts a lot of pressure on the government to offer this population a low-cost alternative solution.

A single piece of building substance, typically flat and rectangular in shape, is called a wall-panel board. It is frequently constructed elsewhere and then delivered to the installation site as a finished piece. This building material is typically constructed of concrete, wood, brick, and other materials. The distance between two neighbouring supports or joints, which offer stability and containment, is filled with the hardened flat materials. Concrete wall panels made of cement, sand, and gravel are among the easily accessible building supplies. To give specialised qualities like decoration, lightness, thermal insulation, and soundproofing, other building elements are added to the concrete mix. In addition, the manufacture of traditional building materials like steel, cement, and bricks requires a significant amount of energy and results in the emission of greenhouse gases that harm the environment. Globally, the average temperature has risen to worrisome levels, melting glaciers and raising sea levels as a result. As a result, many coastal areas are on the edge of submerging. Due to global warming, some nations, like the Maldives, have already lost a large portion of their land. It was determined at the UN conference on climate change to restrict temperature increases to 1.5 °C over preindustrial levels, which calls for significant reductions in atmospheric carbon dioxide emissions. Therefore, there is a tremendous need to search for alternative building materials that are affordable, sustainable, environmentally friendly, and