

Low Cost Housing In Central Uttar Pradesh Using Prefabricated Building Components: A Review

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Abstract: The house is the basic need of every human being, but a continuous increase in the population of India creates a big problem every person, which decreasing home. In India alone 27 million units have been tracked to be in shortage. The dream of owning a house particularly for low-income and middle-income groups is becoming a difficult reality. For the building project the foundation, walls, doors, windows, floors, and roofs are the very important element which can be examined individually based on the needs thus improving the construction speed and reducing the construction project cost. This research aims to study the various characteristics of prefabricated building methods of research for low-cost housing and the economic advantage of achieving by its applications.

Index Terms – Low-cost housing, prefabrication, foundation, walling, roofing, finishing etc.

I. INTRODUCTION

Detail about Uttar Pradesh Central Region: Uttar Pradesh is situated in the north part of India at the latitude is 28.15250 N and 63.30300E. The state geographical area of 243290 square kilometres. The economy of Uttar Pradesh is mainly based on agriculture and industries, 65% of the total population depends on agriculture. Uttar Pradesh produces a different type of waste as by-products from different areas. Like rice husk ash, rice straw ash, bagasse ash from the agriculture, and fly ash from the industry. These wastes are very harmful to the environment because these are not disposable. The waste disposal crisis arose to the creation of non-decaying waste materials one solution to this crisis lies in recycling waste into useful products.

The states are divided into the following regions:

(1)Purvanchal / Eastern region (2)Bundelkhand / Southern region (3)Ruhailkhand / western region (4)Awadh / Central Uttar Pradesh region.

Climate condition:

Normally, the region enjoys a humid climate, and the affected by the south-western monsoon. Winter season from November to February is marked by mean night and day temperatures of 7.6° C and 25° C respectively. January is usually the coldest month with temperature goes down 0° C during severe cold months December and January. At the average temperature of 33.8°C, May and June is the hottest month at this time the temperature is ascended 46° C. Hot winds known as 'loo' are very common from mid-May to mid-June. With the advance of monsoon by mid-June, the temperature starts decreasing. The average annual rainfall varies 1020-1140 mm. The climate is typical subtropical characterized by long and intense summers. About 80% of the annual rainfall is received from the south-western monsoon. The relative humidity is highest in August about and lowest in April.

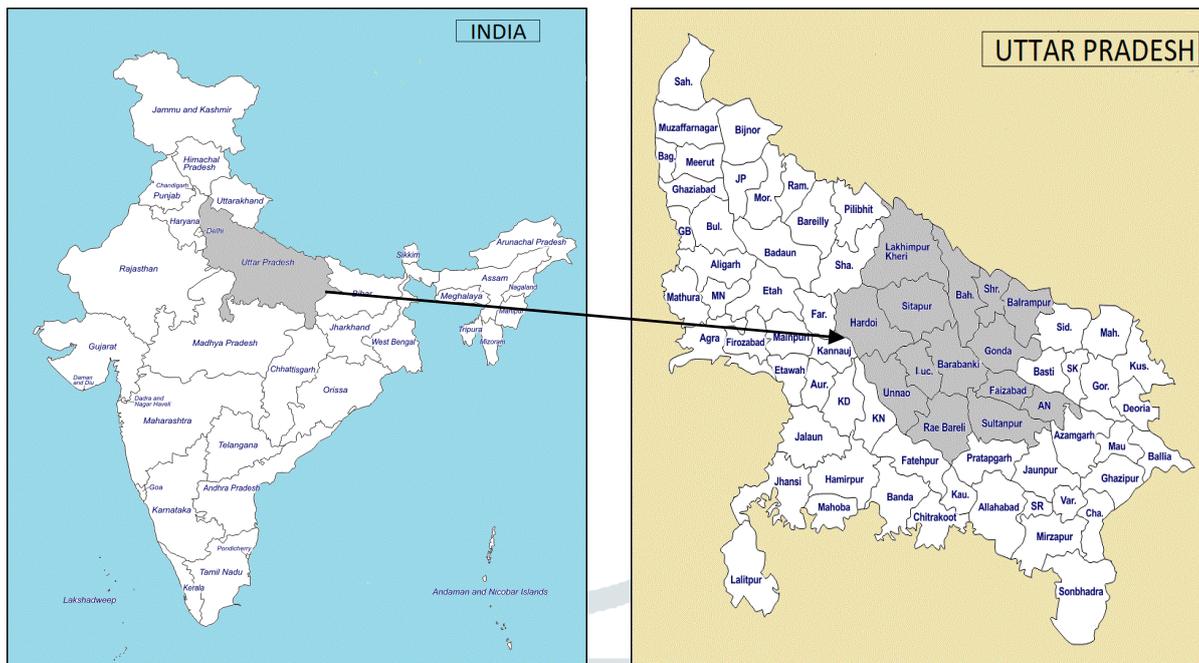


Fig1. Central Uttar Pradesh

House is the basic need of every human being, but a continuous increase in the population of India creates a big problem every person, which decreasing home. In India alone 27 million units have been tracked to be in shortage. With an annual population growth rate of 1.64% as compared to world population growth 1.23%, low-cost housing is a new consideration which deals with effective techniques which help to cut the construction cost by locally available resources and technologies without losing his strong performance and life of the structure. Prefabrication technology becomes an ideal choice due to reducing the construction time and life-cycle cost of buildings. It provides both speed and quality of the construction and capitalizes on the advantages that these large-scale projects offer in terms of volume, turns over and repetition.

II. Literature review

Vivian W.Y. Tam (2011) their research paper is based on the compression, they have to compare the construction cost for the traditional construction and low-cost housing construction technologies. He weighs all construction techniques, like walling, roofing and lintels etc. Strength and durability of the structures stability safety and mental pleasure are factors that assume top priority till cost reduction. He used the case studies for investigation. They found that about 26.11% and 22.68% of the construction cost can be saved by using low-cost housing technologies in comparison to the traditional construction methods in the studies for walling and roofing respectively.

Preetpal Singh and Gurjeet Kumar (2016) According to them there is need to adopt the economical construction methods either by up gradation of traditional technologies use locally available resources, material, technologies and skills with efficient inputs leading economic solution. This has become the most relevant aspect in the context of the large volume of the housing is constructed in both rural and urban areas and consideration and limitation of the availability of recourse such as building material etc. This study makes an overview of the housing situation in India and chooses correct and economical technologies in the country. Resulting from the using of low-cost housing technology cut approx 25% of total cost.

Dheeraj B Tapkir et al (Sep-2018), there are three causes which affect the cost of housing that is time, the material used, and techniques. There is cost deduction in construction due to adaption of different (pre cost and aluform) techniques aluform is best construction techniques in which construction reduction is 32.28% and time reduction is 58.33 % more and wasted production also very less. For cost-effective house presence study clearly, state that yellow form technique a suitable technique for low-cost housing mega project.

V. Yuvaraj and R. Dharman (June-2016), carried out in this research, modular construction depends on cost and time use over them in-situ construction work. The factors lifetime and cost are analyzed in normal construction in the prefabricated construction industry. Fabrication may be able to save time; the ability to work together simultaneously helps to better coordination between different merchants, onsite and offsite. In addition, less on-site staging, such as scaffolding, is often involved. Regionally, the ability to avoid weather impacts can construction time.

Swaptic Chaudhary and Sangita Roy (2013) carried out the study prospectus of low-cost housing in India, having the advantage in that area such as India and other developing countries where concrete is very expensive. It is observed that in this paper the using alternate building construction materials are depended on the availability of the material in that particular region,

like as the agricultural waste and industrial waste etc. Availability of materials on that region means locally materials selected as the construction material the transportation budget are cut 30% of the project budget.

R.B. Suryavanshi V.G. Jana (2016) according to them the lack of housing that exists in our country, and our Hon'ble Prime Minister's views of providing affordable "Housing for all" by 2022, it is the need of time to adopt speed and cost-effective construction technologies. Prefab construction technology is applied in a large-scale project, which can be used to mitigate the housing shortage by constructing multistoried and mass housing projects in urban and rural areas. Finally, for success, such projects required continuous monitoring and due mash on the removal of bottlenecks and fast track legal approvals to make troubled timelines.

Shaikh ajim et al(march 2017) they carried out this study, the construction methods using local material available is required to adapt with the adequate knowledge of the properties of the material. The construction cost is reduced ₹40 to ₹50 per square feet can be achieved by using low cost and locally available material.

K. Jaiganesh et al (2016) carried out a study of a comprehensive review on the low-cost construction system. A lot of reviews were studied in this research for the low-cost building system, the best way to adopt renewable materials, natural materials, and environment-friendly materials are to use locally available materials and reduced resource allocation and innovative methods are applying for reducing the cost of the building and to achieve to sustainable and green building.

Vidya Devi and Rinki Taur (2009) carried out through this paper the different facet of fabricated building methodologies for low-cost housing by highlighting the different prefabrication techniques to cut the cost of construction. Since the there repeated output of similar types of part of precast construction, therefore, it results from the speed in work, more productivity and economy. In prefabricated construction, the work on the site is minimized, thereby enhancing the reliability of the work and quality of the cleanliness.

III. Conclusion

This study is mainly focused on the prefabrication in the low-cost housing, which is able to reduce the cost and time of construction. The traditional construction method requires additional material which increases the waste; we need to use prefabrication method to avoid this waste as a result the cost and time of our building can be reduced. The prefab technique is used in large projects, which can mitigate the housing shortage by constructing multi-storeyed and mass housing projects in urban and rural areas. With present research and theories of work until now, tells us to focus on nearby resources so that we can have flexible properties of material to sustain for a definite period in making of low cost building components.

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