

Construction of prefabricated buildings for the homeless people in rural areas

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Abstract—This paper aims to study prefabricated low cost building for the people who don't have proper housing facilities. Economical advantages are achieved by adopting this method and the rate of poverty will get reduce. The major current methods of construction systems considered here are construction of prefabricated structures in a plant and assembling them in a construction site. Prefabricated building is the completely assembled and erected building of which the structural parts consist of prefabricated individual units or assemblies using ordinary or controlled materials. Prefabricated construction is a new technique and is desirable for large scale housing programs. Prefabricated structures are used when normal construction materials are not easily available.

Keywords – prefabricated, buildings, rural area, homeless.

I. INTRODUCTION

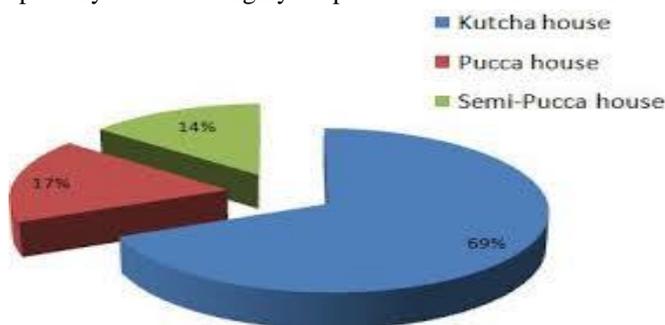
The major problem facing in India is the development of rural areas, the major drawbacks are homeless people in our country.

India, a vast country with more than 600 million people, has very inadequate housing facilities. The conditions in rural areas where more than 70% of people lives, the housing stocks is entirely inadequate. The table1 shows the relation of countries with homeless population.

Table 1: Relationship of County Population to Homeless Population

	Total Population ²	Homeless Population	Percent of Total
2013 Count	3,090,132	4,251	0.14%
2015 Count	3,145,515	4,452	0.14%
2017 Count	3,194,024	4,792	0.15%

Only some amount of housing in rural India are pucca, while a large majority of these are either kutcha or homeless people, their population is well over a million in rural areas. The kutcha houses need constant repairs and their roofs specially are highly prone to fire hazards.



Therefore the construction of prefabricated low cost buildings will help in reduction of kutcha houses and number of homeless people in rural areas.

The traditional method of building a house is to transport bricks, timber, cement, sand, steel and construction aggregate etc., to the site and to construct the house on site from these materials.

In prefabricated construction only the foundations are constructed in this way. While sections of walls floors and roof are prefabricated structures with windows and door

frame included and transported to the site lifted in to place by a crane and joined together.



The prefabricated technology is high workable, low cost and fast method of construction. The strength attained by this method is almost same as traditionally constructed buildings. Many countries use various precast building system during second half of the 20th century to provide low income housing for the growing population, they were very popular after the second world war.

II. METHODOLOGY

India has the largest economy the agriculture sector is the largest economic sector. India is fast emerging in poverty and people with inadequate housing facilities in rural areas.

III. ADVANTAGES



The benefits of prefabricated construction method is from the fabrication of standard components on factory floor. This production is less time consumption compared to actual condition of construction process. The prefabricated elements are transported to the site for installing process. At the site, the modules are unloaded, moved into position with the support of heavy cranes, and assembled to form a designed building.

Together with the fast assembly, prefabricated construction also saves a lot of money on the construction project. By using standard patterns, the building materials are saved at the manufacturing factories. This help to reduce the waste in formwork and other materials that can occur during traditional building procedures.

Another considerable profit using prefabricated construction method is the energy efficiency. Because the prefab elements of a panelized home are precut, they fit snugly together, making for a tighter edifice. This means less effort for heating and cooling, resulted in lower energy bills.

The projects of rural construction includes the construction of agricultural production buildings and installation, housing and public buildings in agricultural and workers settlements.

The construction of prefabricated buildings costs around 12-15 thousand per 400 sq ft while the traditional construction costs around 2-3 lakh rupee.

Modernization of the physical structures, construction processes use prefabricated units composite materials affordably.

Kerala, state in India in the recent months witnessed in the sharp increase of homeless people because of flood. It has recorded that 2.23 lakh people has lost their houses.



- **Cost and time** : Reducing cost and time of construction is the potential key for adaptation of prefabricated construction.
- **Real estate developers** : Simplicity of connections, with different ranges of sizes and varieties of available structural components may help in adopting prefabricated housing.
- **Workforce** : With the existing construction industry the same workforce can be trained for prefabricated housing which may in turn drive them in entrepreneurship creating employment option.
- **Present demand of housings** : With the present demand for residential housing and Government scheme it is becoming necessary for an alternative solution to housing in time.
- **Expansion of the city** : The main cities in Assam are expanding gradually because of traffic regularities and land reform policies, this areas needs to be developed with proper infrastructural policies.
- **Present modern trend** : The present modern trend and culture demands high rise buildings with modern architectural design and safety.
- **Government policy** : The present Central Government focusing largely in the infrastructure development of the north eastern region through “Act East Policy”, therefore there is a huge demand and development likely to take place.
- Self supporting readymade components are used so the need for formwork shuttering and scaffolding is greatly reduced.



IV. BARRIERS AND CHALLENGES

There are numbers of issues and challenges facing in rural areas many of which have an influence on the ability to provide affordable, sustainable housing.

The rapid growth of population causes stress on infrastructure and basic services. As per the census 2016 the growth rate of population has natural changes of 1.2%. As such with that increasing number of populations will create unemployment, poverty and inadequate housing facilities.

Also,

- Careful handling of prefabricated components such as concrete panels or steel and glass panels is required.
- Attention has to be paid to the strength and corrosion-resistance of the joining of prefabricated sections to avoid failure of the joint.
- Similarly leaks can form at joints in prefabricated components.
- Large prefabricated structures require heavy-duty cranes & precision measurement and handling to place in position.
- Large groups of buildings from the same type of prefabricated elements tend to look drab and monotonous.

V. CONCLUSION

India has huge scope for modernization of its Construction industry. Prefabrication which is a knowledge based technology still not broadly adopted in India as per the development since 1950. The key issue for promoting prefabrication from the published barriers and constraints are the lack of regulatory body and policies favouring the

implementation of prefabricated technology. However the success of prefabrication technology as a low cost construction technique is the identification of local available materials that can be used as a part of appropriate structural components with proper design. More over the data base system for the present housing numbers is not adequate. Some needs to be carried out as a database management system. There must be a proper integration and co-ordination between the builders, suppliers and engineers as an outcome for future development. Prefabricated could be potential benefit in terms improving the rural areas. Housing comfort can be provided as per requirement with better quality and durable factory products. Government also needs to adopt some policies to facilitate the prefabrication to the homeless people in rural areas. Future scope may consider structural design consideration of different component parts, safety aspects and the use of locally available materials for creating more sustainable solution. This paper aims to provide an overview on the rural areas and consider how it could be a useful technology in the development of rural areas. It also aims at adopting sustainable housing in rural areas.

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