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LOW COST HOUSING

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ABSTRACT

Low Cost Housing is a new concept which deals with effective budgeting and following of techniques which help in reducing the cost construction through the use of locally available materials along with improved skills and technology without sacrificing the strength, performance and life of the structure. There is huge misconception that low cost housing is suitable for only sub standard works and they are constructed by utilizing cheap building materials of low quality. The fact is that Low cost housing is done by proper management of resources. Economy is also achieved by postponing finishing works or implementing them in phases. Now in low cost housing, building material cost is less because we make use of the locally available materials and also the labour cost can be reduced by properly making the time schedule of our work. Cost of reduction is achieved by selection of more efficient material or by an improved design. The sustainability can be defined as meeting the needs of today without compromising the needs of future generations. Low Cost housing has the potential to produce good quality housing at a price that is affordable both in the short and long term. Thus, Low Cost housing must aim at economic, social and environmental sustainability from planning to implementation phase and at the same time result in housing that is affordable, accessible and environmentally less damaging . The National Urban Housing and Habitat Policy-2007 intends to promote sustainable development of habitat in India with a view to ensuring equitable supply of land, shelter and services at affordable prices to all sections of society . However, the Ministry of Housing defines affordable housing based on revenue, size and several cost-effective measures. For economically weaker sections, affordable housing would mean a unit gauging between 300 and 500 sq.ft with pricing below Rs 5 Lakh for which one can pay Rs. 4,000- Rs. 5,000 as EMI. For mid-income groups, an entity between 500 and 600 sqft with pricing upto Rs 7 Lakh – Rs 12 Lakh for which an EMI of Rs. 5,000- Rs. 10,000 is required to be paid as EMI would be regarded as low cost housing. It covers the use of local materials in the different components of building to make the building low cost and it makes affordable houses for low income people. Owing a house for low income and middle income is becoming a difficult. Hence, it has become a necessity to adopt cost effective, innovative and environment-friendly housing technologies for the construction of houses and buildings for enabling the common people to construct houses at affordable cost. This paper compares construction cost for the traditional and low cost housing technologies.

Low cost housing refers to those housing units which are affordable by that section of society whose income is below than median household income. This depends on three key parameters—income level, size of dwelling unit and affordability. This paper aims to point out the various aspects of predestined building methodologies by highlighting the different available techniques, and the economical advantages achieved by its adoption. In a building the walls, floors and roofs are the most important sections, which can be analyzed distinctively based on the needs, thus, improving the speed of construction and reducing the construction cost. This paper also aims

to cover the use of local materials in the different components of building to make them as low cost available solutions for low income groups.

INTRODUCTION

Low-income housing projects that are sustainably designed are intrinsically better than traditionally built housing projects for a variety of reasons, including the benefits they provide to a wide range of people. Residents of low-income housing projects that are sustainably built can benefit in a myriad of ways. Sustainable design incorporates energy-efficient and water-conserving technologies in the buildings as well as in the appliances of these buildings. As a result many low-income residents of sustainably designed housing developments benefit from lower utility bills. Techniques, like designing spaces with a number of large, well insulated windows are aimed to cut down on electricity costs (Brooke, Cohen, Hampton). In a joint study done by New Ecology Inc. and the Tellus Institute looking at 16 sustainably built housing projects it was found that, "occupants would save an average of $12,637 in utility costs over the life of each home," (Cohen). They also found that the buildings studied were able to save up to 50 percent more on energy costs, up to 20 percent more on water, and also save 20 percent more on electricity costs (Cohen). In Seattle, Washington, sustainably built [green] low income housing projects have been developed using "systems, appliances, lighting fixtures and landscaping that save money and water, low-fume paint and carpeting, and durable materials that do not have to be replaced as often" (Cohen). Residents benefit from low utility costs, and housing developers and owners benefit with government subsidies, lower operating costs, and buildings that are sturdier than those traditionally built for low income housing (Marin; Cohen). Because of all these benefits, residents in sustainably designed housing projects are likely to stay in the project for a longer period than those living in traditionally built projects.

A community with a sustainably designed project often views the project in a more favorable light than they would a traditionally built housing project, enabling residents to become part of the community instead of being treated as pariahs (Marin). Studies show that people living in sustainable housing projects move less frequently, and have positive feelings about their homes. Susan King, a principle at the architecture firm Harvey Devereaux in Chicago commented on the benefits to the community and to residents that come with a green housing project, saying, "In cases where the developer promotes the green aspects of a building to the community and also educates the people who live there on these features, the building starts to be known for these qualities. This can start to override the stigma often associated with low-income housing and even serving as a point of pride for those who live there" (Marin).

Green housing projects also provide a healthier living environment than traditional housing projects (Marin). A Cornell study, comparing over 200 low-income and mid-income children in upstate New York focused on the effects of living conditions on health, and found that the poorer children were five times as likely to suffer from environmental stresses which lead directly to health problems (Public Health; Overcrowded and noisy living conditions may contribute to bad health). "Researchers examined crowding, noise and housing quality for the sample of 8- to 10-year-olds and found that the levels of stress hormones measured among the low-income children were consistently higher, indicating those children were under physiological and psychological stress." Sustainable low-income housing has the effect of reducing these environmental stressors because it inherently incorporates the issues of occupant well-being as much as it incorporates green building

materials into design. In 1990 the New York Times ran an article on the skyrocketing rate of epidemics in the inner cities since the 1980's. Urban poor, the residents of inner cities, are living in what reporter Elizabeth Rosenthal terms "islands of illness" (Rosenthal). "In Newark, Dr. Beatriz Arpayaglou is a pediatrician with the University Hospital in Newark's Children's Health Project, which sends medical teams to low-income housing projects in vans fitted like medical offices (Rosenthal). "We're seeing scenes here straight out of underdeveloped countries, diseases that haven't been seen in the United States since the turn of the century," said Dr. Arpayaglou" (Rosenthal). Poor nutrition, overcrowded living conditions, and exposure to disease carrying pests are all factors which contribute to the health crises of the very poor, especially poor children (Rosenthal; Acevedo-Garcia; Spielman).

PROBLEM STATEMENT

The design of housing is one of the most difficult tasks in the field of architecture. A proper understanding of the nature of human needs is of crucial importance in the formulation of housing and space standards. A shelter provides people their functional, social and spiritual needs. Therefore the dynamic issues on housing which partly can be solved by bureaucratically administered; politically imposed programs are seen as one of the method of solving housing shortages (Turner & Fichter, 1972). Different agencies, authorities and developers have come with numerous efforts to solve the problems of low-cost housing within their local context, where situations of many poor people depend on contractor-oriented, bureaucratic systems for house building causing exorbitant costs for the final product. This approach seems to be a favourable method for Malaysian government in attempting to respond to low-cost housing deficit across the country. In comparison to other countries that looked in to 14 other alternative approaches in meeting the demands of low-cost housing such as selfhelp housing delivery system. As we are all aware, housing delivery systems have been classified as developmentally oriented (self help/self build) or conventionally oriented (contractorbuilt) process. It has been claimed that a developmentally-oriented approach to building procurement would encompass the parameters of community empowerment and participation in design, job creation via the development process, and economically and environmentally-sustainable procurement (Alexander, 1985; Serageldin, 1997). Although it may take longer to construct than the contractor-built houses and it needs appropriate support, it generally results in a better housing product, more sustainable income generation opportunities, greater community development and greater mobilisation of sweat equity and monetary savings (Reddy, 2003; Mutua, 2003; Manie 2003). The research focuses on alternative provision of low-cost housing at the local level, in the context of collaborative participation for community development or also known as self help approach and of developing a simplified prefabricated construction system that could promote self build housing among the low-income household in rural area. The study takes a broad perspective on the development of self help housing issues and explored through a detailed site experimentation, in which the participatory experience has been relatively appropriate. The principles of Segal Method developed by an architect in United Kingdom, to promote self build schemes are reviewed and compared.

1.2 Research Questions

According to O'Leary (2004; p.47), research questions are essentials to define the investigation, set boundaries, provide direction and act as a frame of reference for assessing the work. The fact that self build houses still exist in other developing and developed nations and has significantly contributed to the housing provision among the

public and private sector, indicates that this type of approach has been executed by the low-income group as well as policy makers. It is a wonder how it was able to be implemented, why is it successful there, what are the key ingredients needed and so on. The research questions are as follow to which answers will be sought to further understand about self help/self build housing in Malaysia:

1. Why are self build houses not popular in Malaysia?

2. What are the factors or key features of self help housing that are able to promote such activities among the low-income households in the rural area?

3. What are the main constraints in promoting self build houses among the low income households in rural areas of Malaysia? Another fundamental issue that this research is addressing is to analyse the possibility of introducing a simplified system of house construction which relates to self build principles as a mean to initiate any self build group in rural areas. On that foundation alone, the following are research questions that need to be dealt with:

4. How can the available low technology of self build houses be applied into housing design and planning process?

5. What are the material preferences of Malaysia's rural low-income households should they opt for self build houses? 6. How can prefabrication system be implemented in promoting self build houses?

LITERATURE SURVEY

2.1 Low cost Housing

2.1.1 Introduction

Low-cost housing represents a serious national problem in both developed and developing countries. The acuteness and magnitude of the problem are obviously more pronounced in developing countries, but increasingly the issue of low-cost housing cuts across economic, social, technological and political aspects. The Malaysian government realised this fact and has created ambitious public housing programs (Agus, 2001, Tan, 2008) in order to meet this demand. Regardless of all these efforts, Malaysia's implementation is far from acceptable, particularly the supply and delivery of affordable housing for low-income families. It is dreadful to see that the 10th Malaysia Plan is only targeting 78,000 affordable units when Malaysia is facing more than 1.3 million people under the poverty line (Bakhtyar, 2013; Tan, 2011). It is the opposite for supply and delivery of houses for middle- and high-income groups, which at times has a surplus in the production of high-cost housing (9th Malaysia Plan review report, Abdul Rashid, 2000). This is mainly due to the fact that there are high number of speculative demand and supply without taking consideration the real demands of the public (speech by Deputy Minister, 20031). This has led to too many unsold properties especially high cost condominiums and houses in unfavourable areas.

The mounting cost of housing, which has escalated greater than household earnings, has a negative impact on the housing delivery system for the poor. Moreover, it reduces the capability of the poor to sustain the expenses of buying an affordable house. The question of affordability centres on end-financing by the purchasers. Only certain lowincome household can afford to purchase houses by developers and those are mostly with a fixed source of income. Financial institutions would usually decline applications that do not meet that particular

minimum requirement. The implementation of the nation's development programmes has improved the cost of living for many Malaysians. The New Economic Policy (NEP), which was implemented during 1970-1990, has managed to alleviate poverty and restructure the nation's multi-racial societies. This has created a change of economic activities from agriculture to non-agriculture and a change in population distribution. It is estimated that the future housing needs is close to 2 million new houses will have to be constructed. As a result, the public and private sectors are pressured to provide them. There were the informal settlements that also began as soon as urbanisation in urban areas increased, but it is regarded as sub-standard and were soon demolished, replaced by a formal housing development. In developing countries like Malaysia, the main players in the housing delivery processes are the households themselves. There have been a great number of people in Europe and the States practice incremental self-help housing because other options are out of their reach. Even with the low-cost housing developments provided by public and private sectors, the number is still insufficient to house the low-income families. Nowadays, urbanisation has expanded and influenced sub-urban areas, turning some towns as satellite towns and transforming neighbouring villages into modern day 3 housing park that lacks planning and infrastructure. Though there is price control over the low-cost houses, it is still a burden and difficult process to financially commit in purchasing these houses; consequently, many young families prefer to build their own houses on either inherited or rented land, thus making informal settlements as a more affordable solution. There were official strategies to experiment the self-help efforts of the poor developed in the 1970s through small-scale sites-and-services schemes around the sub-urban area of Kuala Lumpur2 , combined with some form of assistance for selfbuilders. Nevertheless the schemes were re-evaluated 20 years later as a failure by the authority due to the extensive renovation done by the supposedly 'the poor' in urban areas. For years, the debate on housing in developing countries focused on the idea of informal settlements as a vehicle of ownership for the poor. Growing little by little, these informal settlements provided housing that, although certainly substandard, constituted the possibility of having a fairly decent home over time. The idea developed by Turner and other researchers in the 1960's, was that self-help processes, such as those going on in informal settlements, result in ownership for the poor if infrastructure and security of tenure were provided. In a rather optimistic vision that ignited the debate on self-help housing, they argued that what was frequently regarded as the problem was in fact the universal solution to house the poor (Abrams 1964, Turner 1968, 1972 & 1976). John F.C. Turner in his article, "Housing as a Verb", explains the difference between two alternate approaches of meeting housing demands over the world, where housing is either seen as a product or a process. When housing is seen as a product, then it is treated like a commodity where all the emphasis is on its physical attributes.

2.2 Comparative performance of low cost housing with another housing

2.2.1 Introduction

In many developing countries, the main housing practice has been through self-help, strongly propelled by massive rural to urban migration. Since the 1980s, international research and policy agendas focused more and more on a broadened habitat approach and attention for self-managed house construction gradually declined. Yet, self-help housing is still a widespread phenomenon, although mostly unattended or even ignored by governments. This thesis stresses the importance of self-help housing and makes a plea for a revaluation of 'assisted self-help' as part of national and local housing policies. In view of the urgency of the urban housing

question, new pro-poor housing policies are to be developed that actively support self-build initiatives. Assisted selfhelp housing has to be put central on the urban development agenda.

2.2.2.Research Methodology

The collection of necessary data for this research imposed several different methods to be applied. It is necessary to divide the methodology of this study into two phases, since it requires separate methods to extract the data. The following lists all the methods the were used in order to further investigate the issue of self build housing in Malaysia.

2.2.3 Literature Review

The initial stage will involve the conventional method of collecting and reviewing the existing literatures on the subject matter, gather all relevant information for the study, identify the gaps that will be complemented by other methods. Literature review is essential as it will provide the background information on the existing system and assist in charting the directions of the research, in drafting the questionnaires, interview schedule. For example, documents and published information on housing planning and design from reliable sources will be analysed to see the current practices and possible room for improvement. Study on best practices from other countries will be referred for possible adaptation. A literature review was conducted on the origin and development of self-help housing policy in developing countries, this was followed by an analysis of Malaysia literature on the development and practice of low-income housing policies with specific reference to self-help housing. A diversity of literature (books, academic journals, theses, media, conference papers, Internet) dealing with both national and international experiences of self-help housing policy and practice were consulted.

2.2.4. Pilot Study

A pilot study is needed to measure and identify the matters in question and refine questionnaire. This small scale preliminary study was conducted to evaluate feasibility, time, cost, lucidity of the questions and identifying relevancy of questions in relation to the self help housing issues. This pilot study was carried out on a small group of lowincome household in the sub-urban area. These respondents will not be involved in the final sampling as it would influence behaviour of the research subject.

2.2.5 Focus Group Interview

The purpose of focus group interviews is to engage a variety of prospective users in dynamic conversation about housing solutions, needs and preferences in order to gain the understanding of current specific issues that are related to housing markets, and to begin the development of project concepts that are appropriate for the target market. This process will provide qualitative data, up to date information and issues, which are not considered by the researchers or other reports.

2.2.6 Quantitative – Questionnaire (Phase One And Phase Two)

Another methodological dimension of the research project involved two quantitative surveys. Due to the distinctive nature of this research, a multi-method approach is sought to be the best-fitted formula. A quantitative technique relates here to the level of institutional phenomena and uses 'semi-structured' forms of data collection - both interviewing and observation. This is necessary to understand the perception and response

towards the questions. Qualitative technique is also applied in the form of open-end interviews for some selected household individuals, which participated in the constructing the unit of the module in two different areas. The detailed analysis concerns issues of society's basic microstructures, i.e. households, networks of 19 households and related informal social networks connecting individual household principles and willingness, which comprise the primary units of cultural issues and voluntary efforts. This is followed by a second set of quantitative survey which examines the extent to which participatory initiatives can work as a mean of activating the possibilities that are present within existing structures and systems, based on the developmental participation theory (Sharp and Bath 1993) and the institutionalist framework (Healey 1997).

2.2.7 Site Experimentation

Next methodology is the design development and manufacturing of a simplified prefabricated system, which is used to test the perception and participation level among the low-income group in a rural area. This site experimentation is used to test the hypothesis of the study. This is a controlled experiment to provide insight of cause-andeffect through display of result that materialised based on certain exploited factors.

2.2.8 Limitations Of Research

Every research has certain limitations caused by the nature of the research methods employed and the way they are applied. One of the limitations in this research is disclosing and predicting the actual cost of the prototype. It is based on a one room or space prototype, hence there are various experimentations done on designs of wall panels as well as sizes of floor modules. Further to that the price of timber fluctuates based on demands and supply in the market. 20 Furthermore, even though the size of the sample used in the research was substantial, but this limits the generalisation of the findings. The researcher tried to gain an in-depth view of the studied population and to avoid generalisation, having in mind that it was not within the scope of the current micro research to produce a general theory.

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