

INCREMENTALITY IN MASS HOUSING

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Abstract: In India, the urbanization is taking place at very large scale. Urban centres are growing twice as fast as the national population. Resulting in proliferation of the mass housing, especially for the economically weaker section that are designed for numbers but lack in consideration for the traditional housing patterns and inherent incrementality. Such considerations ensure regional connect for people migrating to urban centres from rural areas. For that matter the study deals with analysis of evolution and need of mass housing. Further, it gives an understanding about traditional housing pattern. It also gives a historical overview of mass housing policies and discusses current housing scenario. Furthermore, it identifies deficiencies in public sector mass housing. In addition, it elaborates need to address the traditional living patterns and incrementality. Moreover, it explains that how it can be a solution to overcome the deficiencies of public sector mass housing. The study is based on the analysis of literature studies. Furthermore, it directs to formulate design guidelines for public sector mass housing catering the needs of urban population with reference to the traditional living pattern and incrementality.

Index Terms - Traditional housing pattern, Incrementality, Regional connect, Urbanization, Migration, Public sector mass Housing, Economically weaker section.

I. INTRODUCTION

Housing is one of the essential needs of human beings; along with food and clothing and comprises the triptych of mankind's survival. It is the basic need that provides economic and social security to individuals in society and has significant leveraging effect for the nation. (Sangma, 2013). Housing is also regarded as an engine of economic growth, and can give a big push to the economy through its strong backward and forward linkages with about 250 ancillary industries. In India, the most significant factor in development of mass housing is industrialization, which brought about a massive movement of rural residents to and from urban areas for work. It has evolved tremendously over time. (Correa, 2010) and (Benjamin, n.d.) To address this cyclical flow of people from rural to urban areas government housing policies have played a vital role in it since the 1950s. At the start of planned development the policies were focusing towards well-being of the people and later on the focus was shifted towards economic interests. Simultaneously, the government's part has also altered slowly from provider to a facilitator of housing activity.

India contemporarily is witnessing increasing levels of urban population. Urban centers are growing twice as fast as the national population. (Joglekar, 1995). Nearly 31 % of the country's population lives in cities and urban areas as per the census 2011. Moreover, the level of urbanization is expected to reach 50 % mark in the next 2-3 decades. The increase in urbanization has led to enormous pressure on mass housing, employment, social security, residency, citizen rights, land, infrastructure, transportation and open spaces. However, despite significant growth in mass housing stock, it is almost obsolete in meeting the needs of the urban population resulting in a proliferation in the informal sector. The ability of informal sector is limited and gives way to mushrooming slums and squatter settlements in the urban areas.

On the other hand, our existing traditional settlements give an interesting insight about how the poor built houses for themselves within the constraints of severe resources. Traditional housing had multiple and mixed landuse where activities were not rigid. There were clusters, and houses extended to outdoors. They had a certain characteristic and the language of the housing pattern. (Ekram, 1995). The traditional living pattern allowed people to undertake housing construction as per needs and ability to generate funds or resources. As in Indian context, people desire to add extra space that requires variety, flexibility and incrementality. The idea of flexibility, variety and incrementality is inherent in our traditional living pattern. And the incremental developments have strong roots in their past, modified by people according to their current needs. (Benjamin. n.d.) Incrementality in housing is a step-by-step process. It is an integrated urban development process, helping in building communities. It is not quick, immediate or complete, and begins with a start-up core where the owners can control the expansion of their house depending upon their needs and available resources. Furthermore, It is more than just housing; it develops social networks that can support services and small-scale economic and income generating activities. (Goethert. 2010)

By considering the traditional living patterns and incrementality in public sector mass housing the quality of residential environment can be enhanced. It also gives rise to varied spatial patterns. The spatial patterns of social and economic activities promote interaction among the residents. The streets in addition to movements became a place of these activities. Other than that there are household activities that can spill over the semi private areas and streets due to limited space available in the house. (Bhatt. 'et al.'1995). Incidentally, this spatial pattern, where commercial activities are integrated with housing is the most common phenomena of the traditional housing in India. At present, the government policies are trying to address the quantitative aspects i.e. need, demand and supply, but unable to address qualitative aspects i.e. incrementality, quality of physical and social living environment. These are the major concern for the public sector mass housing in India. For that matter, it is crucial to revisit our traditional living patterns and incrementality to create regional connect in our mass housing.

1.1 Methodology

The study attempts to learn from the traditional living patterns and incrementality inherent in it. That can be a solution to overcome deficiencies of public sector mass housing. For effective analysis, the study is subdivided into following parts; the first being development of an understanding of; Evolution and need of mass housing, traditional housing pattern, a historical overview of mass housing policies and current housing scenario. The second part shall comprise of review and analysis of public sector mass housing and the deficiencies associated with it, examples of incremental housing in India along with a review of approaches

supporting the concept of incrementality in the world. Moreover, this identifies the deficiencies of mass housing and needs of the people catering to the traditional housing pattern and incrementality. The third and last part shall deal with the results and discussion. Furthermore, the study shall emphasize finding solutions for public sector mass housing having a regional connect that will further support the urban population to live in an improved residential environment.

II. EVOLUTION AND NEED OF MASS HOUSING

In India, Most significant of the development of the concept of mass housing is industrialization or industrial revolution and large scale migration after the partition of country, which brought about a enormous relocation of people coming from rural to urban areas. Along with it, the internal growth of the urban areas itself, and it has evolved tremendously over time. The poor migrants, marginal earners, landless labours, etc. whose existence can no longer be sustained by the rural areas, coming to the cities and urban areas in search for work (Correa, 2010) and (Benjamin, n.d.).

Urbanisation and rapid population growth are affecting adequacy and access to minimum housing requirements by a large section of the urban population. Meanwhile the cities are considered as 'engines of economic growth'; the cities are bound to face huge challenges. Since supply is not keeping pace with the growing demands, despite of significant growth in housing stock, there is significant growth in informal sector within the urban population. Whose ability is limited and gives way to mushrooming slums in the urban areas. The priority of housing has come at last in their list of needs. And they want to live close to their work or as near as possible where they can find work (Correa, 2010).

In order to address this problem public sector housing bodies have undertaken Mass housing constructions which can effectively alleviate poverty by improving people's living environment, health and making them more productive. A major concern for India is the widening gap between demand and supply of housing units and the quality of living environment this is posing a new challenge to the Policymakers and urban planners.

III. TRADITIONAL HOUSING PATTERN

Existing traditional settlements gives an interesting insight about how the poor built houses for themselves with the constraints of severe land and resources. Traditional housing have multiple and mix land-use where activities are not rigid, it had certain characteristic and the language of the housing pattern (Ekram, 1995). Traditional housing pattern allows people to undertake incremental housing construction as per the needs and ability to generate funds or resources.

In traditional housing pattern a range of daily activities are closely associated with the social and economic activities. The combination of living and work functions together, permits healthy interaction among people of various levels. In our traditional housing pattern there is majorly four elements; space needed for private use of family, front doorstep where children can play and where one can chat with the neighbour, neighbourhood meeting places and at large the urban spaces. For different societies these elements may vary according to the context, climate, income and cultural patterns (Bhatt et al., 1995). It enhances the quality of the housing environment. It also gives rise to varied spatial patterns. Incidentally this spatial pattern, where commercial activities are integrated with the housing is the most common phenomena of the traditional housing in India. These settlements are examples of planning without planners and architecture without architects; people themselves are the planners and architects (Joglekar, 1995). It is important and need to consider traditional housing patterns in our contemporary public sector mass housing.

3.1 Examples exhibiting adaptation of the idea of traditional housing pattern

3.1.1 Yamuna Apartments New Delhi

The project has been designed for the lower middle income group and constituted a fairly cohesive group, with specific living requirements. Taking this into consideration, the housing was designed as an integral community settlement, where the traditional housing elements were incorporated. The design idea revolves around a traditional Indian village, with its lively narrow galis, where the womenfolk and children would pull out their charpai onto the gali, so that they were able to share experience and conversation with each other, while doing their household chores.

There is an integration of traditional design elements such as balconies for shading the external wall surface, courtyards and terraces for outdoor living in summer, thus establishing a hierarchy of open and enclosed spaces, private a semi private areas. Each unit is provided with a balcony, verandah or terrace that provides a space for outdoor activities. Since the entire society was designed like a traditional village, chowks form an integral part of this scheme and the galis leads to chowks. It gives an interesting central place for daily activities on a broader scale (Hans, 1984).

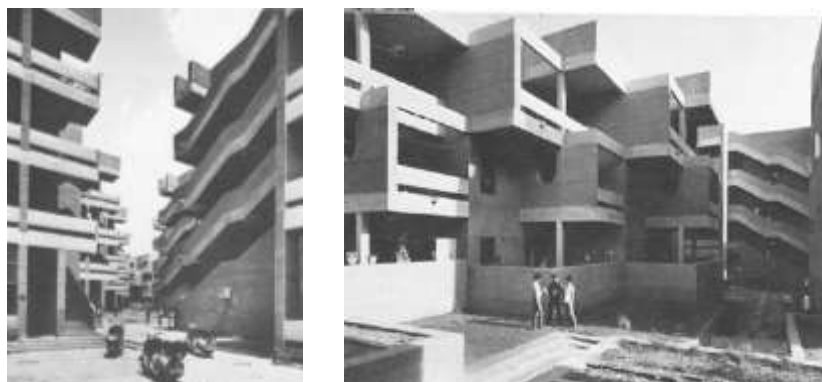


Figure 3.1: Traditional Design Elements (Source: Hans, 1984)

3.1.2 CIDCO Housing, Belapur, Navi Mumbai

The CIDCO Housing built in New Bombay in 1998 to provide low cost housing for approximately 1000 units mostly comprising of one to two room units. Irrespective of a very low project cost it was important not just to provide the space, but also to develop a living environment of high quality.

The housing was designed as a high density structure, because the available area and in order to achieve quality for the outdoor space that was effective to create an urban environment by the provision of public, semi-public and private spaces, that accommodates various functions and create a micro climate within the site. And traditional narrow streets that links all housing units that give the resemblance of a traditional Indian village. A large amount of life takes place in the streets. In India, the traditional housing environment consists of public squares, courtyards, terraces, verandas and balconies where the people interact and make the exchanges that are so essential to life.

The vehicular traffic is restricted to the peripheral areas only to allow for safe but reasonably priced footpath connections within the development. Building forms define a variety of enclosures for public and private use. With this concept the housing provides a high degree of social interaction in everyday Indian life. Efficiency is not the only major factor but also it is important to make living environment on the basis of a wealth of space (Sreekanth, 2011).



Figure 3.2: Traditional Housing Environment (Source: Sreekanth, 2011)

By both of these projects Yamuna apartments, New Delhi and CIDCO housing, Navi Mumabai, one can identify that how the consideration of traditional housing pattern in housing can enhance the quality of life and living environment and provide a regional connect to the people.

IV. A HISTORICAL OVERVIEW OF MASS HOUSING POLICIES AND PREVALENT HOUSING POLICIES IN INDIA

This chapter gives a brief overview of government policies and prevalent housing policies in India since the 1950s. Government housing policies have seen a lot of transformation post independence. In the beginning policies were focusing towards well-being of the people of all sections of the society and later on the focus was shifted towards various economic interests and the policies are only focusing to the economically weaker sections. Simultaneously, the government's part has also altered slowly from provider to a facilitator of housing activity (Mittal, 2014).

For an easier understanding of housing policies we can divide the period since 1950s into four phases and each phase comprises of five year plans. The Indian economy is partly based on planning through its five-year plans. These are prepared, implemented and governed by the planning commission with its focus to improve economical condition of India and offer better housing environments. For that matter various policies were prepared and implemented to provide this kind of facilities. It is a process, evolving by the time.

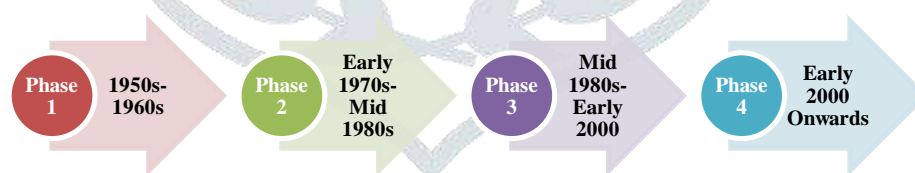


Figure 4.1: Phases of planned development (Source: Author)

The first phase combines first two decades when the housing policies were conceptualized and the government was considering the problems of all sections of society. In the second phase, the period from the early 1970s to mid 1980s; during this time, the government started focusing only on economically weaker sections of the society. The third phase is comprises of the period from mid 1980s to early 2000s. in this duration, government housing policies started favoring to free market and its focus shifted from physical provision of housing to housing finance. And it the fourth and current phase, the government has definitively limits it part as a facilitator of housing. The government is now encouraging the participation of private sector in provision of housing for all the sections of society, and itself backing all these activities (Mittal, 2014).

V. CURRENT HOUSING SCENARIO

As per 2011 census, the population of India is 1,210.98 million, out of which 31.16% is urban population. In a decade, the urban population growth rate is increased from 27.81% to 31.16%. This growth of population in urban areas creates problems like land and housing shortage, stressed conditions of infrastructure and amenities i.e. water supply, electricity and open spaces (Mayank et al., 2012).

5.1 Housing stock; need/ demand and supply

As per 2011 census, the available the housing stock for urban areas is 78.48 million against 78.86 million urban households. It shows the gap between need/demand and supply is getting minimized, but actual housing shortage is high because of certain percentage of the current housing stock being dilapidated and people are living in congested conditions. Due to these factors, a large

gap between the need/demand and supply of housing is still exists (qualitative as well as quantitative) in urban areas (Mayank et al., 2012).

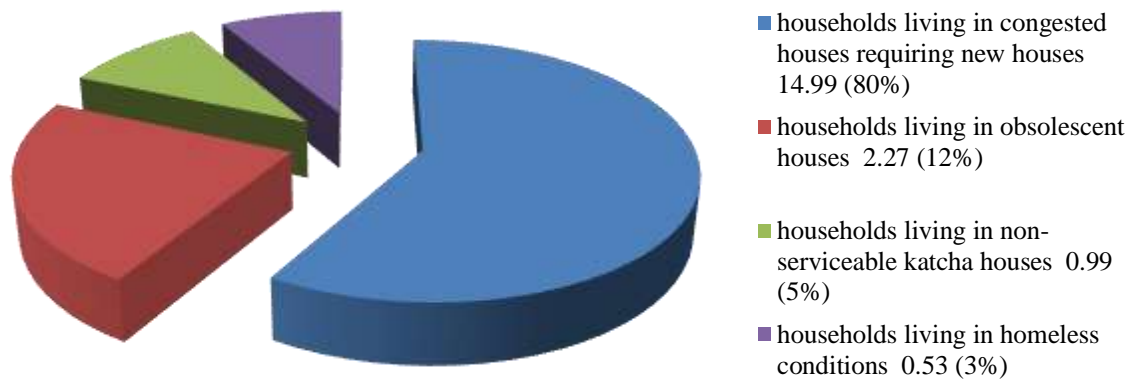


Figure 5.1: Factors affecting housing stock; need/demand and supply (Source: Kundu, 2012)

5.2 Housing shortage:

As per the assessment of the Technical Group constituted by the Ministry of Housing and Urban Poverty Alleviation (MHUPA), the urban housing shortage at the end of the 10th Five-Year Plan is estimated to be 24.71 million against 66.30 million households. And 88% of this shortage is for EWS category and another 11% for LIG category. For MIG and HIG categories, this shortage is only 0.04 million. and in the 11th Five-Year Plan, it is estimated that the total urban housing requirement by the end of 2012, will be 26.53 million against 75.01 million households. By this pace of housing shortage it is expected that a requirement of minimum of 30 million additional houses will arise by 2020 (Mayank et al., 2012).

Table 5.1: Housing shortage in urban areas (Source: Mayank et al., 2012)

Income groups	Monthly expenditure/capita	Estimated no. of households (2007)	Housing shortage in million (2007)	Percentage shortage
EWS	539-3,300	21.81	21.78	99.9%
LIG	3,301-7,100	27.57	2.89	10.5%
MIG	7,100-14,500	16.92	0.04	0.2%
HIG	14,501-above			
	Total shortage	66.30	24.71	37.3%

In Indian context, the private sector majorly builds housings for high-end and upper-mid housing segment, On the contrary, the housing for the EWS and LIG is largely provided by the public sector. That is not sufficient as compared to the current housing shortage for these categories. These categories are highly neglected, and thus the scarcity in the supply of housing is majorly for the EWS and LIG categories (Mayank et al., 2012).

5.3 Affordability:

Affordability is perceived as a ratio of price/rent of housing to income of household in general. It differs for various income groups i.e. EWS, LIG and MIG etc. The affordability of EWS is much less than that of LIG or MIG categories. As per the Deepak Parekh Committee report, the affordability ratio for different income groups is as follows:-

Table 5.2: Affordability ratio of different income groups (Source: Wadhwa, 2009 and Mayank et al., 2012)

Income groups	Income levels	Size	EMI/Rent-income ratio	Cost of housing to income
EWS-LIG	<1.5 lakhs per annum and 1.5 -3 lakhs per annum	300-600 SQ.FT.	>30% households gross monthly income	>4 times households gross annual income
MIG	3-10 lakhs per annum	>1200 SQ.FT.	>40% households gross monthly income	>5 times households gross annual income

If we separate the EWS and LIG categories as in most of the public sector schemes these are taken as separate categories, the EMI/ Rent- income ratio for EWS is lowered to not more than 20 % and cost of housing to income is lowered to 3 times. The income category, affordability to pay EMI/Rent and affordable cost of house of different income groups as categorized by the public sector, the affordability levels are as follows;

Table 5.3: Affordability levels and income categories (Source: Wadhwa, 2009)

Income category (in rs.)	Affordability to pay EMI/Rent (% of income)	Affordability to pay EMI/Rent per month	Affordability to pay cost of house (multiple of annual income)	Affordable cost of the house (in rs.)
EWS 539-3300	20	538-660	3	96876-118800
LIG 3301-7100	30	990-2190	4	158448-350400
MIG 7101-14500	40	2920-5800	5	438000-870000

It is very clear, that at current prices the households of the respective categories cannot achieve housing in most urban areas. And not all the households in each category would be touching the upper limits. It is crucial to identify the lower limits also for each income group, In order to give provisions for the lowest of income group in every category. The calculation of Affordability shall not only based on affordable cost of the house or rent but must consider other fees/charges i.e. registration charge, search cost etc. Required to be paid during the time of purchase/renting of the housing, and it must also include taxes, maintenance cost, utility cost, etc. as it also affects the lifetime cost of the housing (Wadhwa, 2009).

VI. PUBLIC SECTOR HOUSING

To address the problems of widening the gap between demand and supply due to migration and rapid urbanization of the cities, public sector housing bodies have undertaken Mass housing constructions based on various government policies. Following is a review of public sector housings worldwide and the deficiencies associated with it.

6.1 A review of public sector housing in the world

6.1.1 A case of mass housing provisions in Turkey

Every industrial country has housing issues; As Turkey is also known as an industrial country. To address these housing issues various housing policies are formed addressing the housing gaps for EWS & LIG categories. Housing needs of a country varies from one another, depending upon their socio cultural aspects. Thus the solutions catering these needs cannot be a universal throughout the world. The housing policies in turkey not responding towards socio cultural aspects, that is why these are not very effective to cater their needs.

The proliferation of its mass housing projects in the past decade has attracted many scholars and professionals to understand whether these mass housing projects are able to create change in the life of people in the urbanized areas as desirable or not, And also addressing the gap created by the demand and supply of housing stock without any negative effects (Sarica, 2012).

6.1.2 A review of Mass Housing in Abuja, Nigeria

Housing is very well addressed as one of the most basic need of human being. Due to its necessity and importance, it has developed by the time. Due to migration from rural to urban areas, mass housing plays a vital role in the growth of urban areas. The major factors which contributed in the development of the concept of mass housing are The industrial Revolution and The World War, due to which a huge quantum of housing were to be needed in a quick time to provide economical housing solutions to the affected people. The mass housing projects which are seen as effective solution to continuously growing population. But this population has socio cultural and economic needs, which also has to be addressed. The mass housing projects in Abuja, Nigeria are not successful in terms of housing environments in Abuja, developed by the public sector (Alao, 2009).

6.2 The problems/ deficiencies associated with Public sector housing

To address the quantitative aspects (need/ demand and supply) of housing, these are prioritized by public sector but the qualitative aspects like incrementality, quality of physical and social living environment are not present in these housing (Joglekar, 1995). The public sector mass housing especially for economically weaker section are designed for numbers, assuming that every user is same set of needs, and socio economic characteristic. Policy makers are often made little or no consideration of these factors (Benjamin, n.d.). And at present government bodies are unable to address the qualitative aspects, which results in problems/ deficiencies associated with the public sector mass housing that can be classified as micro level and macro level problems.

The Micro level problems can be envisaged as; in public sector mass housing a standard size is used to house all sizes of families with different background, these are very small due to economic reasons. There is no possibility of future expansion and house extensions. These housing are lack in hierarchical order of spaces i.e. public, semi public and private areas and lack individual's identity, this discourages the user to modify their unit to suit their needs and enhance their individuality. As in our traditional housing, there are multiple and mixed land use, and activities the not separated rigidly, and in case of public sector housing, it discourages the home based economic activities or small scale income generating activities (Bhatt et al., 1995) and (Joglekar, 1995).

And the major concerns at macro level are; the deterioration is visible in the quality of physical and social environments. The public sector mass housing are unable to cater the traditional lifestyles. These housing lacks in informal character, the considerations of climatic factors and regional character of the area, as all of these factors are built in inherently in our traditional housing environments. These housing lacks in the services and public amenities, thus creates unhygienic environments. Open spaces are used for variety of activities in our traditional settlements. it encourages the socio-economic activities, and on the other hand, in public sector mass housing these spaces are scarified to accommodate maximum number of units that results in inappropriate open spaces (Bhatt et al., 1995) and (Joglekar, 1995).

VII. INCREMENTALITY IN HOUSING

Incrementality is referred as the process of building construction which grows as per the owner's needs and financial condition. It is a progressive development process. The houses are designed by the people themselves as per their needs and likings. And people manage and participate in construction process of the houses (Ekram, 1995). It allows flexibility, variety along with

incrementality. The idea of flexibility, variety and incrementality is inherent in our traditional housing pattern. And the incremental developments have strong roots in their past, modified by people according to their current needs (Benjamin, n.d.).

Incrementality in housing saves money and time during start-up, which allows more and more people to make their house as per their needs. In comparison to complete housing unit with reference to size and quality, the incremental approach provides a good start-up option. It allows expansion of core unit step by step according to the user needs and preferences. When the family grows, house may be expanded and when the income of family grows housing standard may be upgraded. It also gives flexibility to the user invest their income in the food, health, education instead of on the housing as per their preferences (Nohn & Goethert, 2012).

It adjusts the technical and financial capability of both the households and the public sector (Wakely & Riley, 2011, as cited in Nohn & Goethert, 2012). It may be a solution at large scale that is affordable for all; the user as well as the public sector. It also shows that willingness and ability of users to contribute according to their needs and preferences (Nohn & Goethert, 2012).

7.1 A Review of approaches supporting the concept of incrementality in the world

Incrementality along with variety and flexibility in housing is used worldwide by millions of individual households. Different terms are used to describe incrementality that are ‘user-controlled housing’, ‘self-help housing’, ‘assisted self-help housing’, ‘self-managed-housing’, or ‘incremental housing’ (Bredenoord, n.d.). The ideas are quite similar with different terminology. This part gives an idea of global experiences on incremental housing development.

7.1.1 Flexible urban housing for changing lifestyles: the case of USA

The concept of Flexibility is not new in the design of housing, but it not utilized in its full potential for designing the housing in the United States. But it is manifested as in the forms of limited options and customization suggested by builders or developers. The challenges in the current housing scenario in the United States are, the first, is the lack of housing options developed by the housing industry that fails to cater the variety of lifestyles of a very wide and diverse population. Second, is lifecycle of housing understanding the fact that owners or households may change by the time and buildings become obsolete in meeting both the spatial, social, and technological needs. The ability to adapt as per the different needs for a building can increase the life of the building. Allowing Variety and flexibility in the housing design can play a vital role to address these challenges. By doing this variety of lifestyles and lifecycle of housing can be improved (Yu, 2011).

7.1.2 Personalization as a sustainable approach to mass housing: the case of Malaysia

Standardised housing is very common in current mass housing in Malaysia. And following the building and planning regulations but the current renovation works shows the design is responding to meet the expectation of users of different backgrounds. “Personalization” is a sustainable means to achieve sustainable living environment. It is an act of marking and changing within a user’s territory. It ranges from furniture rearrangement to structural modification of living units. In Malaysia, it is suggested that the post occupancy modifications of houses is termed as “personalization”.

“Personalization” is the necessity as well as a process in housing, as the needs of people are keep changing. In context of mass housing personalization, the role of user is central to design or create living environment, as it is an extension of user’s personality. The user should be able to manipulate, shape and alter the environment as per their needs. Although renovation works is a part and parcel of the housing process, it have been in practice in this country for a long time, there is no proper guidelines established to accommodate the potentially feasible approach for a better sustainable and quality of living environment. This approach allows the users to be involved in the design or improvement of their living environment, it may be considered as a “self-provision housing” (Jusan, 2005).

7.2 The cases of Incremental housing in India

In India, Incrementality is built in the traditional housing pattern. It is manifested in the old settlements of Indian cities like Lucknow, Banaras, Jodhpur, Jaisalmer and many more. But if we talk about the planned developments under the government housing polices there are architects like B.V. Doshi, and Charles Correa who had designed the projects like Aranya-incremental housing, Indore, Incremental housing, Belapur and HUDCO housing, Jodhpur respectively are the examples of incremental housing.

7.2.1 Aranya –Incremental housing, Indore

Balkrishna Doshi about the Aranya Low-Cost housing project: “They are not houses but homes where a happy community lives. That is what finally matters.” Furthermore he says: “It seems I should take an oath and remember it for my lifetime: to provide the lowest class with the proper dwelling.”

Doshi was appointed for panning and designing the housing for the “Economically weaker section” by the Indore Development Authority. He decided to integrate some upper income groups to subsidize the lower cost groups. Out of these 65% were allocated for the very poor, 11% for lower income, 14% for middle income, 9% for high income group.

The idea behind the project is taken from the existing slum settlements in Indore provided an interesting insight into how the poor build houses for themselves in the face of severe land and resource constraints. Traditional settlements have multiple and mixed land use. The existing slums, although unplanned and crowded, had certain characteristics and language of settlement. The project was conceived, taking considerations like context, climate, local materials and construction techniques.

There were clustering of huts with the formation of small neighbourhoods and houses extended to outdoors. Whenever possible a tree was planted to create a small public space. Streets were not merely corridors for movement but they also accommodate various social, economic and domestic activities. Ten houses formed a cluster that opened into the street. Open spaces linked the central spine and formed a triangular space incorporating a community function. At dwelling level, the individuals were provided freedom to integrate indoor and outdoor spaces. A veranda or OTTA helped in expending the small EWS house and enhanced the space quality. Permissible house extensions such as platforms, porches, balconies, and open stairs were built which created an interesting street character.

A kit of meaningful building elements is developed. Form variations on a standardized plan are achieved through permutation and combination of various elements which are to be exercised by users. This participatory process satisfies users priorities of house form while offering pleasing verities to street facade.

Small shops are operated within the congested area and highlighted their relevance in the neighbourhood as a means of earning a livelihood with minimum investment. Provisions of subletting and commercial options were provided. Users have flexibility to choose how they wish to design the spaces as per their needs and requirements. Priority was given to future scope for incremental growth, within the plot horizontally as well as vertically (Ekram, 1995) and (Joglekar, 1995).

7.2.2 Incremental housing, Belapur

It is an experiment based on the principles of incremental housing. And an example of how high density housing can be achieved in a low-rise typology, while including open to sky spaces and services, like schools, that the community requires. It covers the entire range of income groups. To ensure incrementality each unit is free standing placed at its own site. It allows the house to expand unilaterally and thus minimises the collaboration between two units. There is a variety of plans that cover the social spectrum, from squatters to upper income families yet, the footprint of each plan varies little in size (from 45 sqm to 70 sqm), maintaining equity in the community.

In this project at the smallest scale, seven units are clustered around a small courtyard of size 8mx8m. Three of these small clusters form a bigger cluster of twenty one houses, surrounding an open space of 12mx12m. And then furthermore three of these clusters combine to create a community space of 20mx20m. And this spatial hierarchy continues until one reaches at largest level where schools and other facilities are located. Houses are constructed simply and can be built by traditional masons and craftsmen. It generates opportunities of employment for local workers (Correa, 2010).

7.3 The problems/ deficiencies associated with incrementality

The major cause for the failure of the concept of incrementality is the location of the projects. As these projects are primarily for economically weaker section, who wants to live close to their work place to reduce their travel time and cost. The scarcity of land and the increasing land prices resulted in the concept quite hard to develop. These projects were mostly built on the urban fringes, far away from the employments sources and lack of adequate public transportation facilities. And due to which the users could not afford to live in these housing and they sold up their units or the units remains unoccupied (Benjamin, n.d.).

The poorest families can't afford to build themselves after buying the serviced plot due to lack of resources, and without any financial aid or assistance it is very difficult to build the house. And on the other hand sometimes these projects are highly subsidized; this tends the beneficiaries to resell their plots at higher rates. There is not the problem in the concept but in implementation (Joglekar, 1995).

VIII. RESULTS AND DISCUSSION

An in depth analysis of the literature studies of various aspects of mass housing clearly indicates that there is a need to consider the aspects of incrementality in our public sector mass housing. It also identifies the need of hierarchical order of spaces that gives an opportunity for the people to interact, for children to play and provides spaces for various daily outdoor activities. Moreover, there shall be provision for spaces from which small scale income generating activities or economic activities may take place, in the form of formal shops as well as designated informal vending spaces. In addition to it, there shall be provision for multifunctional spaces which can be used for social interaction among the neighbours and for various community activities i.e. religious, community gatherings and marriages. Furthermore, location of the housings shall be strategically chosen in a sense from where various social infrastructure facilities and public transport facilities are within the reach of the occupants. Along with it, the study reflects that there are deficiencies due to which the public sector mass housing are not utilized in its full capacity resulting in unoccupied housing or used for rental purposes. These housing are unable to meet the needs of traditional living, incremental growth, regional connect and quality of physical and social living environment.

IX. CONCLUSION

The ongoing rapid urbanization and large scale migration of rural residents to urban areas are creating immense pressure on public sector mass housing, especially for economically weaker section. Consequently, public sector mass housing are coming up at a very large scale, that majorly considering the quantitative aspects like need, demand and supply assuming that every user has the same set of needs and socioeconomic characteristic. But the consideration for qualitative aspects; traditional living pattern and incrementality are not taken in to account in these housing. Due to it, majority of the occupants living in these public sector mass housing do not have sense of belonging, regional connect and willingness to live there. It results in the unoccupied housing or housing used for rental purposes as the beneficiaries are not living there, and the housing stock created only considering the quantitative aspects is getting obsolete. It further results in creation of slum and squatter settlements.

The study undoubtedly demonstrates significance of the fact that consideration of these qualitative aspects can play a vital role in creating conducive living environment for the occupants of public sector mass housing. In addition to it, the study shows that these housing are unable to meet the needs of urban population with reference to the traditional living including aspects of incrementality and quality of physical and social residential environment.

The consideration of aforementioned recommendations in the public sector mass housing shall help to overcome the deficiencies of these housing and benefit the occupants of economically weaker categories. It will help to create conducive living environments for the occupants. Therefore, the traditional living pattern and Incrementality should be considered as a major attribute in public sector mass housing that gives an opportunity for the occupants to create social networks and establish themselves in the cities. Furthermore, it provides sense of belonging and regional connect for the new migrants coming from rural areas to urban centres. Moreover, it will help to cater the incremental needs of the occupants and improve the quality of physical and social living environment.

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