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A Humane Approach Towards High Rise, Affordable, Mass Housing.

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Abstract: By the year 2050 the world population will increase from 7.9 billion to 9.7 billion and close to 66% of this population will live in cities, declaring the age of the vertical city. High rise development offsets rising land costs and absorbs demand for space. However there are many problems associated with high rise living, risks associated with urbanization like disease, crime, environmental damage and vulnerability to disasters and social conflict also compound as density increases. This research aims at addressing these problems in order to create better spaces and places to live. The problems addressed include, issue of cost- affordability, inclusivity of community, multiplying ground level- creating neighborhood spaces, adaptive and flexible interior design and scope for incremental development.

Index Terms **- Adaptive and Flexible Interior Design, Affordability, Inclusivity of Community. Incremental Development, Multiplication of Ground Level, Neighborhood Spaces, Sustainability.**

I. INTRODUCTION

With increasing urban population, urban planning for the survival of the species, vertical development is mandatory at this point. There are number of problems associated with vertical living, especially the vulnerable groups are most affected due to the criteria of affordability.

The Purpose of this study is to explore how the space and place a person lives in, is capable of altering their mood and behaviour. The aim of the study is to create better spaces and places to live, both individually and collectively, to create sustainable and healthy high rise, affordable mass housing communities that support and celebrate a diversity of people.

The objectives of the study include: to study the factors affecting well-being, physical comfort, psychological needs, and socio-economic needs in affordable housing; to analyze vertical living conceptual ideas with an intention to create multiple ground levels in the air which facilitates the creation of neighborhood spaces for social interaction and physical activities; to analyze space standardization and space layout for adaptive and flexible interior design in affordable housing; to study the scope for incremental development in high rise, affordable mass housing.

II. PROBLEMS FACED IN HIGH-RISE AFFORDABLE MASS HOUSING

Some of the problems in high rise, affordable, mass housing, which need to be addressed include isolated living, unable to connect to ground level for social interaction and physical activities, community area does not allow everyone to use it due to physical and mental barriers which affects inclusivity of community, lack of private outdoor space and social outdoor neighborhood spaces, repetitive façade design especially in of mass housing, lack of scope for incremental expansion, inclusivity of community, and economic, social and environmental sustainability. These problems tend to have an impact on the physical and mental well-being of the users.

III. EFFECTS OF CHANGE IN THE BUILT ENVIRONMENT ON MENTAL HEALTH AND SUBJECTIVE WELL-BEING

3.1Factors Influencing Human Behaviour

Factors influencing human behavior include physical abilities, individual personality, the community one belongs to, cultural factors, physical environment.

Psychological processes associated with environmental design include perception, knowledge, and spatial behavior.

Design goals need to support psychological needs, providing functional requirements for activities. Housing related needs include physiological needs, safety needs, belongingness, esteem needs, and self-actualization. Personal factor and environmental factors together influence behavior. [1].

3.2 Spatial Psychology in Dwellings- design of interior spaces

Characteristics of a space include colour and spatial dimension; these are the first thing to be perceived by the user. Characteristic of psychology related to this include perception of space, use of space and behavior in space. This is referred to as spatial psychology.

Different colours used in moderation, and according to the function, and use of space, can have profound psychological presence. Spatial dimensions do not seem to control the use of space but has an impact on the user perception. [2].

3.3 Need for Neighborhood spaces

Built environment alone is insufficient to affect mental health and well-being. Social and physical interaction spaces are much needed for mental health and well-being. [4].

This can be achieved through creation and staggering of mid-rise blocks where urban living does not have to occur in an isolating sky scraper. Staggering of blocks also creates terraces which can be used as spaces for socializing and physical activities. This is known as multiplication of the ground level. Hierarchy of community space can attract users to their comfort. Common spaces to be designed based on how occupants respond to them, hence creating more vibrant spaces to live and interact.

IV. A HUMANE APPROACH TO HIGHRISE AFFORDABLE MASS HOUSING

Humane approach will attempt to provide solutions for problems faced in high rise, affordable, mass housing. The solutions are as follows:

4.1 Multiplication of Ground Level

Children growing up inside a tower suffer from misbehavior and continuous tantrums. Strategies analyzed show different alternatives about how to raise the conditions of urban life on ground to heights. Few of the earliest concepts include:

- The shelving of villas-1909
- The endless vertical-1968/ 1984
- Cities' fragments-1959

Multiplication of ground level benefits by creating community spaces for social interactions and physical activities and also increases the property value.[5].

4.2 Creation of social and neighborhood spaces in high rise

We need to raise the conditions of urban life on the ground floor to heights. Multiplication of ground level can be one of the strategies used to achieve this. This further creates spaces for physical activities and social interactions which impacts the physical and psychological well-being of the residents.

Staggering mid-rise blocks in the vertical direction to achieve height instead of a typical skyscraper introduces terraces at regular heights which act as man-made ground levels in air. This creates a sense of living in a mid-rise instead of high-rise. This makes residents feel better connected to artificial ground created. Sense of inclusivity and community can be achieved by converting these spaces as community spaces for interaction without any physical and mental barriers. Additionally having a hierarchy of community spaces will facilitate users to use the space as per their need comfort level. [5].

4.3 Adaptive and flexible design of interior spaces

Adaptive and flexible design should allow occupants to control the building to their needs; this provides good comfort level for them. Micro level changes in the interior environment with the help of creative design and thoughtful use of materials and finishing provide good comfort level for the occupants. [2], [6].

Providing adequate storage, bath and kitchen are mandatory. Other spaces can be altered as per need of the resident during different time of the day. Eg, living room and bedroom can be altered in usage through the day by having flexible furniture as solution. Providing flexible use of furniture's and movable partition wall can be a solution for adaptive and flexible design.

4.5 Incremental Design

The problem with housing today is, we are providing permanent solution for temporary problems. Residents' themselves don't know how much space they would require in a couple of years. Scope for incremental expansion is much needed in this context. Maximizing usable space, providing distinctive zones for effective space planning can be a way through which this can be achieved.

Incremental solution can be provided in two methods- expanding within the building and providing solutions to expand outside building footprint.

For expanding outside the building footprint, apartments can be designed with dynamic zone and core zone as a solution for incremental housing in high rise. Core zone is main activity area. Dynamic zone can be placed along the periphery and this can be evolved as per need of the resident. This not only creates a scope for incremental development but also facilitates each house to have a unique façade design. This development involves user participation which creates a better sense of ownership for the residents. [7].

Providing a clean slate as modules and with services alone designed gives the buyer the option to purchase number of modules he wants, and according to his needs and space requirements, he can design the interior layout of the space. Incremental development can be facilitated by buying the space adjacent and/or above.

Incremental development within the building footprint can be facilitated by having higher roof level, the resident can introduce a loft as and when there is a need.

4.6 Sustainability

To integrate sustainability into affordable housing, economic, social context and natural resources must be taken into consideration. It is essential to include concerns and inputs of all stakeholders in developing an appropriate sustainability framework for affordable housing. Green buildings are better in providing good environment for the occupants. User needs to be updated and informed of how to use the green facilities without which the design will fail.

Socio-economic context will focus on designing with the intention to bring people from various backgrounds together. Social context will attempt to create a sense of identity, and sense of belonging for all. This can be achieved through creating a hierarchy of community spaces for social interaction, where residents can use these spaces based on their comfort level. This creates a sense

of inclusivity and community. Environmental context can be addressed through passive design strategies for sustainable and efficient design and active design strategies which focus on technologies. [8], [9].

V. CONCLUSION

This study has attempted in providing solutions for the problems faced in high rise affordable mass housing which have a direct impact on its residents' physical and physchological well-being. Problems addressed include: isolated living, unable to connect to ground level- for social and physical activities, community area- does not allow everyone to use it- includes physical and mental barriers, lack of private outdoor space, repetitive façade design, and,lack of scope for incremental expansion.

Humanizing the vertical city will focus on built environment and its effect on the physical and psychological well being of the residents. This will include:

• Creation of social and neighborhood spaces in high rise through multiplication of ground level, this additionally increases the property value.

• Adaptive and flexible indoor design- interior spaces when controlled by the occupants provides a better sense of comfort, this includes layout, choice of materials, flexible use of furniture, etc.

• Scope for incremental expansion both within and outside the perimeter of the core building- into the dynamic space, this is a much need of the time- shortage of urban land, and we should not provide permanent solution for temporary problems,

• Sustainability- social, economic, and environmental sustainability.

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