

Necessity of Affordable Housing in Major Cities of Maharashtra pre and post Covid 19 Pandemic Scenario

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Abstract - The study focuses on the Covid 19 pandemic situation in India, the role of the construction industry in the past, present, and future, and the need for affordable housing in Major cities of Maharashtra. The Current scenario of housing fabric, the use of innovative, alternative materials, planning and project management strategies to overcome the need for adequate housing will be discussed. Primarily in the housing sector many shortfalls exist in developing countries, particularly India, in terms of housing conditions in many of the country's cities. Many studies have shown that using alternative and innovative materials results in cost savings in terms of labour, time, and money. The primary goal of this paper is to study current housing typologies, shortfalls in housing, major reasons for Spreading of Covid 19 Virus and role of an architect in affordable housing.

Keywords - Covid, pandemic, housing, innovative, affordable.

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INTRODUCTION

Shelter is one of the basic need of every human being, Housing is one of the major aspect of Construction industry. Everyone needs the private space and it can be fulfilled by having his own house. More than 1 billion people who can't afford better living standards are forced to live in slums. In developing countries more 80% of population lives in slums and squatter settlements. In coming 20 years the number of people living in slums may raise from one billion to two billion. Every human being is always in search for good lifestyle and better living standards, to fulfill his dreams many people are shifting from rural areas to City in search of better life.

India Scenario

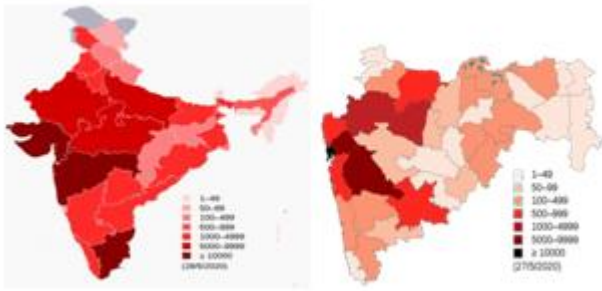
India is a Developing country. India is known for its democracy many people are with low income group and below lower income group. Pradhan Mantri Awas Yojana PMAY is an initiative undertaken by Government of India for the LIG section of society to provide subsidy and affordable housing option in India. It aims to provide Shelter for all till 2022. India is facing about 30 million housing shortage. Government has to play an important role with Architects and engineers to

make houses affordable and suggests policies, methods etc for betterment of the construction industry.

Covid 19 Pandemic Situation in India

Covid 19 Corona virus is spread rapidly in India. The first case was found on 30th January 2020 till 28 May 2020 India had about 158333 confirmed cases, 67,692 recoveries and 4,531 deaths. India ranked 4th in largest confirmed corona cases in Asia and ranks 10th in largest confirmed cases in World. Major cities like Mumbai, Pune, Delhi, Kolkata, Ahemdabad, Chennai etc were majorly affected by the covid19. Mumbai is been the financial hub and Capital of India. Pune being the IT hub, Delhi being the Capital are worsely affected by the corona virus.

About 40% of corona virus cases were seen in Maharashtra and its major cities like Mumbai, Pune and Thane.



Maharashtra Scenario Source: (wikipedia, 2020)

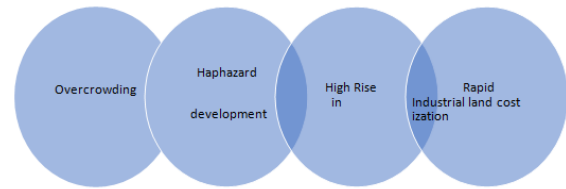
Total Confirmed Cases in Maharashtra	57,000+
Total Confirmed Cases in Mumbai	33,836
Total Confirmed Cases in Pune	5851

Maharashtra till 28 May 2020 has about 60,000 confirmed cases. Major cities like Mumbai, Pune and Thane are worse affected by the corona virus. In Mumbai mainly the Chawls and slums of Dharavi has largest number of Corona virus patients. Dharavi is the largest slum in Asia and About 23000 thousand people stay in less than one square kilometre of area. On average poor people of slums manage to stay in 250 sqft area and accommodates about six people in that area. Daily on average Mumbai has rise of 1000+ confirmed corona positive cases in Mumbai itself. About 1700 cases have been reported in Slums of Dharavi. Mostly Confirmed Cases in Mumbai are mainly from Slums and Chawls in Mumbai.

Pune is an IT, Educational hub of the country the first case of Corona Positive in Maharashtra state was reported in Pune city. Now the city is facing daily on average 200 positive cases the total number of the confirmed positive cases is 5,851 in Pune. The major hotspots of the covid19 are the old city areas of Kasba Peth, Bhavani Peth and Peth Areas. In past days i.e May 2020 pune has seen about 100+ positive corona cases in Janata Vasahat Slums which are similar to dharavi and one of the largest slums of Maharashtra. The peth areas were the wadas and slums were the housing patterns are the main hotspots for the pandemic and rise in numbers.

The major outbreak in these cities is seen from the slums and haphazard housing developments.

Problems Faced by Cities



Due to rapid industrialization and migration from rural to city areas for better life cities are facing problem of overcrowding, due to demand rise in land prices is been seen in recent years which is not affordable to the migrated population and they choose to live in slums, chawls, and wadas etc where rents are low compare to other housing options, but comprising on quality of living. Mainly Economic weaker sections take accommodations in these housing typologies. Labours from other parts of countries mainly are been seen in this typology residing.

- **Slums**

Every city in India is facing problem of slums in India. Slum redevelopment schemes are been executed by government in cities but it is at slow pace due to policies and high demands. People who cannot fulfil the needs of the housing accommodates in slums. High prices of land are major cause of the Slums growth. About 60% of Mumbai city population lives in slums. the slums are seen along the railway tracks, public properties, open areas etc. Construction of slums is done by the wood, asbestos and brick etc. About 100 sqft rooms are people take shelters. Poor quality of living and crowded houses are main cause of the health issues and many other problems. These houses in slums even don't have adequate toilets and share the public toilets which are also in unhygienic conditions.

- **Chawls**

A housing units built by the government authorities for the labours working textile industries and related industries in India. The units are known as Chawls and many low income groups till date resides in this chawls. These units are with single tenements and common shared toilet. Poor sanitation , health problems are seen these chawls due to common sharing spaces like toilets. Many people have given the chawls room on rent basis to the people who cannot afford to pay the high rents in the cities.

Wadas : An Old Housing Typology of Pune City

The houses in the old city area are residential-cum workshop. The old buildings were constructed in teak wood column and mud walls, mud floors etc. These building typology was 'wada' type where the dwelling units were constructed around a central open space with a 'verandah' separating the dwelling unit and open space. Today also many joint families resides in this wadas, many have rented the properties to the students and migrated labours to have shelters. Common toilets are been used wada

for joint families. A lot of common shared spaces is utilized by the inhabitants of this typology. Many people run their business from these wada as a part of traditional business. Mainly they are G+1 structures with courtyards where ground is used as Workshops and upper for residence.

Comparative Analysis of Housing Typology

Housing Typology	Room Spaces	Inhabitants per typology	Toilet	Privacy	Common Space
Chawls	1 room	4-6	Common Toilets One toilet for 4 rooms	Less privacy	Shared Common Space
Wadas	2 rooms	6-8	Common toilets	Less Privacy	Shared Common space
Slums	Congested room	6-10	Common or Public toilets	No privacy	No Space
Apartments	1 to 3 rooms	2-4	Private	Privacy	Less Common Space
Bungalows	Multi rooms	2-8	Private	Privacy for each tenant	No

Social Distancing in Chawls, Slums, Wadas etc cannot be maintained due to sharing of basic common spaces but in apartments and bungalows it is possible hence chances of Corona Virus spreading are less in Apartments.

- Affordable Housing:**

Affordable housing means the housing units which are affordable to the lower income groups and sections of society to buy or to live in. Affordable housing can be achieved through the Appropriate Design Strategies, Proper management skills and techniques done by the Architects before starting the project so engineers and contractors can get idea how they to set the approach for the Affordable Housing. Affordable housing does not mean affordability of the house for the buyer but it also means the Construction, maintenance, operational cost. Construction cost can be controlled by the Time, Material and Labour Management and must also be affordable to the developer or Government with the help of some new construction techniques and materials operational cost can be controlled by which buyer will be satisfied. Affordable housing must be affordable in both ways firstly with developer and secondly for the buyer. Anyway, the houses worked by minimal effort innovation is prominently fit to Maharashtra environment and such houses guarantee longer life, lesser upkeep, better stylish and more noteworthy solace. In this way, minimal effort housing is as yet an interesting issue among specialists and organizers as the development expenses have gone up over the time of most recent two decades. To fulfil the requirement of the Housing some new cost optimization some techniques should be applied to achieve affordable houses to the needy and lower income group people.

- Architects, Engineers and Construction Professional Holistic Role:**

Architects, engineers and construction professional plays an important role in the Infrastructure of any city, to achieve the goal of housing for all these professionals will play a major role. Affordable housing will help to overcome the problem of housing. Most of the cases the architects have to work as a leader and middle man for the Client and Construction Team they have to work with civil and structural engineers for discussion and decision making policies and technical issues faced in the design and the implementation of work. Cost Management and Cost Flow can be optimized effectively time to time, so the drastic decision on going site can be avoided and work can be completed in given time which can help the work to be completed within stipulated time which will avoid cost overruns for machineries and labor on site.

Aspects in which an Architect plays holistic role:

- Design and Planning Strategies
- Selection of Material
- Local material, alternative material etc.
- Management Skills w.r.t Time, Labour and Material
- Innovative and alternative Construction Techniques Attributes like Art and Technology can be considered by an Architect before considering the designing of house it is described to study the basic requirement in house designing.

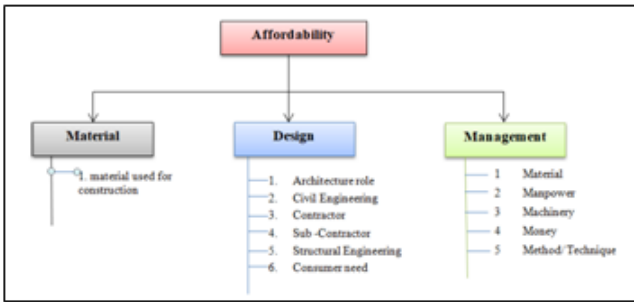
Parameter of Affordable Housing

The word "Affordable" is not correct in design. It can therefore be a comparatively sort of idea and could have many-implied implications in many specific ways. "Affordability" on the urban-housing page means the provision on a parameter basis of "adequate-shelter" or "minimum-habitable area," making certain security for tenure with - in the mean of the usually urban unit. (Ghosh, 2016)

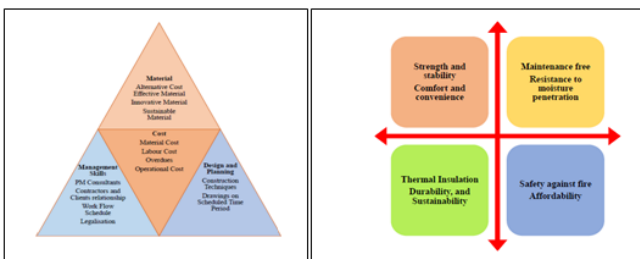
- Need for minimum housing standards for income groups
- Availability of services
- House costs
- Building costs
- House location
- High land prices
- Purchasing and service costs
- Civil, tax and technical fees

- Private operators and profit margins

Affordability Parameters For Affordable Housing Must Be Considered



Research Variables for Affordable Housing & Material Quality Attributes to be Considered before Selecting a Material for Affordable Housing



Comparative Analysis of Some Building Materials Extensively used,

Parameters	Concrete Blocks	Aerocon Blocks	Precast	Siporex blocks
Structural	Can be given strength as per required ;less mortar joint as size bigger which increases stability	Lightweight and requires wet plastering (Aerocon); High strength, Low density and high crack resistance of mortar (Ferro cement)	Produced by casting concrete in reusable mold or "form" which is then cured in a controlled environment, transported to the construction site	Just one fourth the weight of dense concrete, thus ensuring economic design. It also makes SIPOREX ideal for low bearing soils, for seismic zones and for adding storey to existing buildings
Temperature and water resistance	Excellent	Excellent	Excellent	Excellent
Cost (in Rs/square meter)	31.25	Depend on thickness	N.A	N.A
Thermal	Excellent	Excellent	Excellent	Excellent
Buildability	Excellent	Excellent	Excellent	Excellent

Design Parameters Affordable Housing (Rewatkar, 2016)

Cost	User Response
Layout and Clustering	Open Spaces
Sharing of walls	Conducive Private Open Spaces User Friendly Community Spaces
Optimization of building services	Design suitable for all age groups
Optimum space design Space efficiency	Incremental Housing
Circulation	Provision for expanding the space horizontally or vertically
Optimum use of volume	Flexibility
Use of inbuilt storage spaces Multilevel use of space	Adaptable to activity needs at different time of day

CONCLUSIONS

- Affordable housing will be a boon to cities.
- Slums Rehabilitation projects must be undertaken by the authorities to avoid increasing number of slums and spread of disease
- Affordable housing can be achieved with Proper Management Skills, Cost, Design and Planning, Alternative Construction Materials and Techniques.
- Awareness and Study of the Affordable Housing must be done on large scale.
- Covid 19 Might stay with us for long period but we have to cope up with the new methods and outcomes for construction industry and Housing sector.
- Less Slums gradually can reduce risk factors of contagious disease like Covid 19

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