

Analyzing concept and implementation of neighborhood planning with the help of case studies from Pune and Pimpri-Chinchwad

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ABSTRACT - The neighborhood that one resides in largely defines the way an individual interacts with their natural surrounding and forms a major part of one's social life. It is essentially the habitat that we choose and create for ourselves but with increasing urbanization and huge populations flocking in cities, issues like low inclusivity and connectivity, lack of planned recreational spaces and community involvement, improper infrastructure in terms of roads, and violations of building codes and dearth of security seep deep into these habitats. The concept of 100-acre townships is an emerging phenomenon in and around Pune city; with the real-estate market rapidly growing and the onset of IT boom in its surrounding areas, Pune and Pimpri-Chinchwad have seen the concept of neighborhoods from a fresh perspective. This paper examines the need of these areas in terms of housing and lifestyle based on two case studies from Pune and Pimpri-Chinchwad respectively. The primary aim is to study the impacts of the growing service sector on the surrounding residential areas and how the integration of these can assist in building habitats with a greater living standard and enhanced livability. The objective of this study is to plan a space that is resilient and ratchets the affinity between the residential, recreational, and amenity spaces to ensure the availability of all services within a single entity. These neighborhoods must pose as model spaces that can fit the new definitions of the fast-paced urban lives and yet manage to stay relevant to the philosophy of connecting nature, man, society, buildings, and networks. By planning land uses efficiently, securing maximum utilization of resources, and retaining the existing landscapes, the case studies attempt to fulfill the said objectives and expand the scope for future research.

Keywords — *Environment, Habitat, Land use, Neighborhood Resilience, Sustainability,*

I. INTRODUCTION

Pune also known as the Oxford of East is a historical city of India known for its glorious past and this glorious past made it the cultural capital of Maharashtra. Pune is situated near the western margin of the Deccan plateau. It is approximately 50 km on the leeward side of the Sahyadri or the Western Ghats. The area falls in Deccan Trap Basalts of Cretaceous-Eocene age. The flow of rivers here is deeply incised into the basalt or sometimes into late Quaternary alluvium, which occurs in patches. The rocky out-crops present are mostly of Basalt that is mostly used for construction and roads. The city is blessed with the Mula-Mutha river which finally drains into river Bhima. The Mutha river has a dam at 10Km from the city named Khadakwasala dam. This is the major source of water for Pune city and the cantonment area. While the Mula River originates from the Moshi dam. Pune city is well connected with other metropolitan cities like Mumbai, Chennai, Hyderabad, Delhi, and Kolkata. It is having a connection with 3 National Highways that is NH-4 (leads

to Mumbai coming from Bangalore), NH-50 (to Nashik), and NH-9 (to Solapur). Being the second largest city of Maharashtra after Mumbai, the city has a lot of importance in terms of economic and industrial growth. Pune in recent years has emerged as a new start-up hub in Information Technology (IT), automotive companies. The population of Pune according to census India of 2011 is more than 3 million. The growth of population is 6 times more in the city than past 60 years i.e. from 0.48 million in 1951 to 3 billion in 2011. The average decadal growth rate from 1951 to 2011 is 36.54%. The rapid growth of the city is mainly attributed to the industrialization of Pune Municipal Corporation (PMC) / Pimpri-Chinchwad Municipal Corporation (PCMC) after 1960 and the expansion of the information technology (IT) industry in the last decade. The population density of Pune as per census India, 2011 is 12,777 persons per sq. km. Pune Municipal Corporation (PMC) were established in 1950 under the Bombay Provisional Corporation Act. The total area under Pune Municipal Corporation jurisdiction in

1951 was 125 Sq. km with a population of around 4.8 lakhs while in 2011, it covers a total area of 243.84 sq. km with a population size of 3.11 million. Pimpri-Chinchwad Municipal Corporation (PCMC) was established in 1982. It covers an area of 182 sq. Km. and is having a population of 20, 00,000. Now, these 2 areas are having a huge population so it is important that there is a proper habitat for all people. A person's lifestyle choices, standards of living, and social mobility are characterized by the physical environment and how one interacts with the other elements of the ecosystem. The neighborhood is essentially the habitat that we choose and create for ourselves and with increasing urbanization, the choice is not limited but, this human habitat now demands resilience and sustainability like never before. Urban planning now encompasses a greater spectrum of spatial and environmental interaction because there is a need to create habitats where the communities are involved, minimum changes in the existing landscapes need to be considered to retain maximum authenticity and character of the space and inclusivity in terms of social and natural aspects must remain a prime focus. These spaces must be an amalgamation of the economic, social, political, cultural, and aesthetic factors, thus forming habitats that inspire imperishable living. The neighborhood units planned by Sir Clarence Perry and Clarence Stein provide a strong foundation for fabricating this harmony but to develop similar models for Indian cities is not feasible without taking into consideration the composition of our population and the constantly changing dynamics of our cities. Pune and Pimpri-Chinchwad are expeditiously growing towards million-plus metropolises – (Clarence Perry metro concept) and the growing IT sector has made these cities urban magnets with constantly increasing population, leading to greater infrastructural needs and demand for better services. The 100-acre township concept has evolved due to this demand and it is the Indian take on the concept of neighborhood. These townships are largely preferred to individual structures due to the availability of better recreational and amenity spaces and the decreased transit distances between workplaces and residences. There is a huge scope for improvement and innovation in the development of these large-scale neighborhoods in terms of aesthetics and functionality as they can act as a hub for the implementation of concepts like transit-oriented development, aesthetic urban design, and resilient infrastructure and practices. Resilience in terms of climate and disasters must be a part of the concepts that we envision for an ideal habitat, with an increasing imbalance between the different elements of the ecosystem, developing resilience must remain an integral part of the plan alongside creating harmony. Planning the land use and transit network to empower every section of the population, reducing stress on the existing resources, and ensuring maximum utilization while incorporating a sense

of belonging and responsibility for the habitat among the community is of paramount significance in the process of designing these habitats.

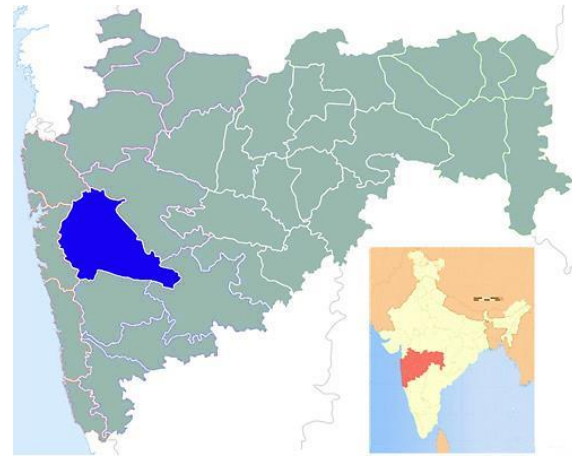


Figure 1. Location Map of Pune and Pimpri-Chinchwad

Source: Google Image

II. PROBLEM STATEMENT

Pimpri-Chinchwad was developed as a satellite town and a counter magnet to Pune city in the early 2000s as a result of the growing load on the city's infrastructure and services due to the IT boom. This inflow of population from neighboring rural and urban areas due to the increased economic activity resulted in urban sprawl and unplanned settlements around the city. PCMC emerged as a prime IT and industrial region in the state as huge IT parks were built to accommodate the inflow of companies and their workforce. As travel times increased due to long transit distances, people preferred to stay close to their workplaces in order to have a work-life balance; but, the city's housing infrastructure did not meet the rising demands resulting in the formation of Pune Mumbai Regional Development Authority. PCMC was divided into sectors to develop a fully planned city with all amenities and services to suit the demands of all economic groups. This led to the onset of Townships being built in and around the region according to consumer trends, townships were a preferred option as they provided a greater standard of living, access to amenities and recreational areas, and decreased transit times. The Development Control Rules were revised to include the new FSI needs and Transfer of Development Rights was introduced. These townships are basically neighborhoods built on larger scales that try to provide the consumers with an alternative to the traditional structures and services in an Indian city. In spite of being built according to the consumer needs and posing as attractive substitutes to the unplanned settlements which exist for decades, these townships have very recently begun to incorporate the concepts of sustainability, resilience, and inclusive urban planning in their vision statements and have greater challenges ahead in the form

of implementing these visions and formulating better policy interventions.

AREA PROFILE OF CASE STUDY 1:

The site is located in Moshi Sector 5 in Pimpri-Chinchwad and falls under the jurisdiction of Pimpri-Chinchwad Municipal Corporation. The site is adjoining Pune-Nashik Highway, NH-50 which is and there are various transportation routes via MIDC Road and Sanjay Gandhi Nagar Road. · The site connects to Moshi village on the north and Chikhali-Akurdi Road on the west within a 4 km radius. · NH-50 connects to Bhosari road on the West and Mumbai-Pune Highway on the South. The soil type of the site area is deep, moderately well-drained, strongly calcareous, fine soils on gently sloping plains and valleys with moderate erosion. The highest contour of the site is 613 m from sea level and the lowest contour is 593 m and the contour lines lie in the north-south direction. The total area of the planned neighborhood is 114.9 acres and the population is 31,380 persons with a population density of 150 persons per hectare; the average household size of each unit is 5 persons.

AREA PROFILE OF CASE STUDY 2:

The study area is located in Pune, Maharashtra, and is governed by Pune Municipal Corporation. The site is at an elevation of 1918 feet at 18°34'59" N 73°57'34" E. It is located around 129 km northeast of the state capital Mumbai. The area of the site is 162 acres (62.42 hectares). The site is adjoined by Wagholi Road which is having a ROW of 15 meters and a length of 15km, the area near it has become a hot real estate destination due to its swift connectivity to Kharadi and Pune International Airport. The soil type of the site area is deep, moderately well-drained, moderate calcareous. Now for the construction of a neighborhood, we assumed the density of the area is 160 people per hectars, and by assuming 4 people per household we get a population of 39,950 people. The FSI provided by Pune Municipal Corporation is 1.10, while the transferable development rights (TDR) is 0 and that's because the site is near the airport and as per the Airport Authority of India (AAI) the PMC cannot give a TDR near an airport site due to height restriction for buildings.

TYPE	BUILT UP AREA TOTAL	PLOT AREA ALLOTTED	FSI USED
EWS	32863.95	24747.365	1.32
LIG	105210	49494.73	2.12
MIG	483834	123736.83	3.91
HIG	369050.2	49494.73	7.45
TYPE	FSI USED	ALLOTTED FSI	ADDITIONAL FSI
EWS	1.32	1	0.32
LIG	2.12	1	1.12

MIG	3.91	1	2.91
HIG	7.45	1	6.45

Figure 2. FSI Calculations for Pune Area Site. Source: Unified Development Control Regulations, Maharashtra State

TYP E	FSI USED	ALLOTE D FSI	ADDITIONA L FSI
EWS	1.24	1.1	0.14
LIG	2.24	1.1	1.14
MIG	4.02	1.1	2.92
HIG	7.25	1.1	6.15
TYP E	BUILD UP AREA TOTAL	PLOT AREA ALLOTE D	FSI USED
EWS	30580.55	25768.52	1.24
LIG	104650	38756.88	2.24
MIG	413520	108923.1	4.02
HIG	329560	36321.64	7.25

Figure 3. FSI Calculations for Pimpri-Chinchwad Area Site. Source: Unified Development Control Regulations, Maharashtra State

MASTERPLAN AND CONCEPT OF CASE STUDY 1:

The key concept of the neighborhood is “Accessibility”. The land uses are planned in such a way that the Central Plaza acts as the centroid of the neighborhood and serves as a central amenity space with the motive of enhancing community interaction by bringing it together. It comprises an amphitheater, clubhouse, gyms, and huge open spaces for an extravagant experience. All the land uses adjoining the plaza separate the residential area so that they are isolated and have minimum effect from the outside commotion. The recreational spaces are planned to provide access to all residential blocks and are huge in terms of area to allow people to connect with nature and increase the liveability of the neighborhood. The commercial space is adjoining the plaza; it can consist of the local stores like groceries and vegetable shops, dairy and salons, etc. The commercial space adjoining the highway can be developed as a commercial complex with restaurants and other stores. The residential blocks are placed with separate spaces for the Economically Weaker Section, Lower Income Group, Middle Income Group, and Higher Income Group. HIG residences have a separate Japanese Garden for recreational purposes but it is open to all residents of the neighborhood as no recreational space is restricted to any particular economic section, inclusivity is ensured and space becomes livelier. All the buildings in the neighborhood are high rise with a height of 45mad have been placed with front margins of 12m with reference to

the Unified Development Control Regulations of Maharashtra State. The major road networks follow the standard road hierarchy as per the Indian Road Congress.

The detailed concept of the township includes a vision of “Climate Resilience”. This includes making the township self-sustainable in terms of energy conservation by installing solar panels and using them throughout the year. Vertical gardens are proposed on 30% of buildings and terrace gardens are proposed on 30% of buildings; these gardens can be maintained by the residents with the help of maintenance support staff of the neighborhood. Sponge sidewalks are proposed on the 30m, 24m, and 18m roads which are made of permeable concrete and sand gravel to make the roads stormwater resilient; bio-swales have been proposed on these roads to help in flood resilience. An urban forest separates the utility area from the residential area; it can be maintained by the active participation of the citizens. The measures for resilience encourage the residents to form an active community of aware and responsible citizens. Community participation can always yield greater results when it comes to developing climate resilience.

MASTERPLAN AND CONCEPT OF CASE STUDY 2:

The concept used for making the master plan is to create an integrated neighborhood, which is self-sustaining & sustainable, having all provisions of physical and social infrastructure, total work opportunities, residential options, and amenities – Work, Learn, Play & Live. The neighborhood consists of 4 sections of residential land use provided for different categories of people as per income group which includes Higher Income Group, Middle Income Group, Lower Income Group, and Economically Weaker Section. The site is totally accessible and has a roundabout at the center which acts as a center of attraction and also is very convenient for the flow of traffic as it will reduce conflict points. There is a commercial area around the roundabout for all kinds of shops which are necessary for daily needs and another reason for keeping this commercial area along the roundabout is that it will not disturb the internal peace of the residential area. The eyes on the street concept is also used which helps to keep the street active and also helps in reducing urban crime. Ethically designed recreational and utility spaces are present in all 4 sections of the residential area to maintain the balance between humans and nature. This recreational area has various landscapes like a maze garden, triangular park, public green spaces, and aesthetic chowks which will have representation of the various cultures of India. The neighborhood is self-sustaining as it includes facilities like an indoor sports complex, gym, children’s play park. The commercial area also consists of clinics and hospitals. The vertical garden technique is used to grow plants on vertically suspended panels. Various plants like moss, vines are used for external vertical gardens. Green walls help clean the air, improve the air with fresh oxygen produced by the plants. Offices and commercial areas are generally known for having a lot of people crammed into a relatively small space. Thus, vertical gardens are perfect for offices and commercial area because it fits a lot of plants in a relatively small space and makes the office look better. The green wall is also a conversation starter and keeps your business top of mind with a "wow" factor. Now all these things together make the neighborhood an inclusive place where people get all the things around

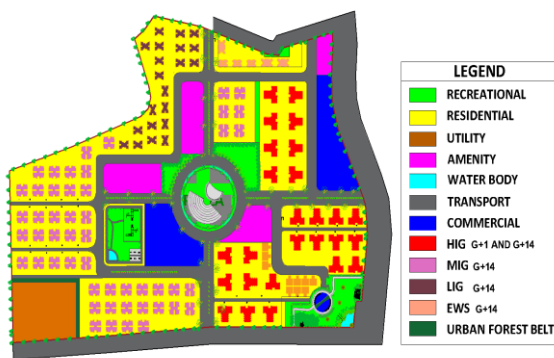


Figure 3. Masterplan of Pimpri-Chinchwad Area

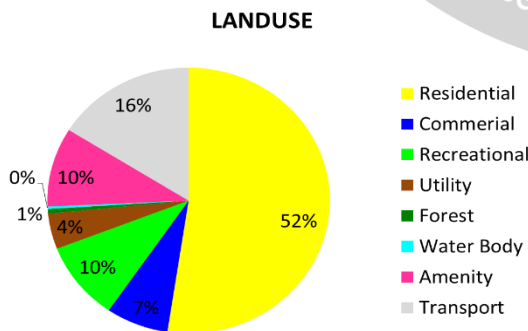


Figure 4. Land use composition of Pune Area site.

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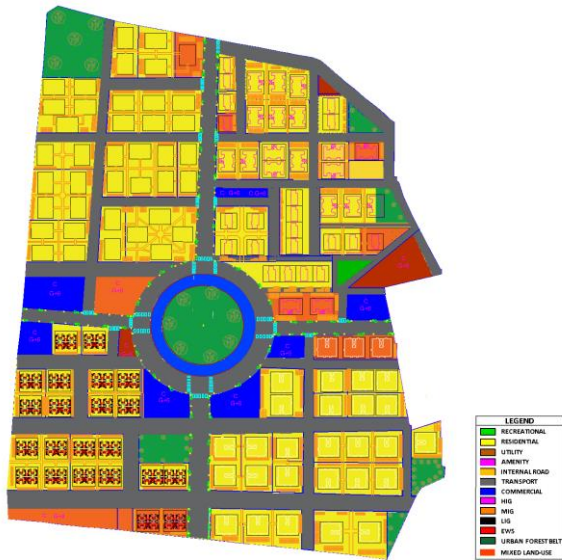


Figure 5. Masterplan of PMC Area

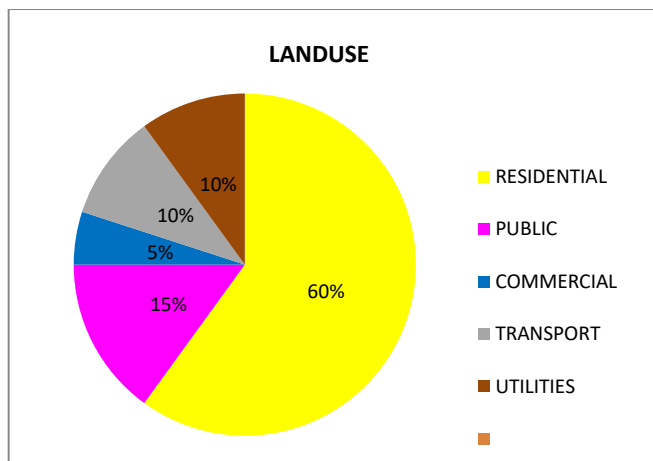


Figure 6. Land use composition of Pune Area Site

III. OUTCOME OF THE STUDY

The first case study i.e. Neighbourhood in Moshi, sector 5 allows the community to be the backbone of the “Climate Resilience” theme. The concept of accessibility reflects in the master plan through the allocation of land uses and strategic placing of amenity and recreation centres. The involvement of the stakeholders in developing and maintaining the township will enrich the experience of the residents and help create social mobility and resilience altogether. The plaza as a central entity for the township reinforces the said themes and makes the place viable and novel at the same time.

The second case study, i.e. Neighbourhood in the vicinity of the Pune domestic airport tries to provide a model with social inclusivity and maximum utilization of resources while trying to ensure the self-sustainability of the neighbourhood in terms of social and physical infrastructure. It has amalgamated the various amenities and recreational area with the residential zones to ensure the convenience of every resident. The ideas of sustainability and huge recreational spaces along with the

appropriate allocation of land use make it practical and resilient.

The purpose of the study is to analyse the different neighbourhood ideas and if they match the criteria that we study in the neighbourhood concept models of Sir Clarence Perry and Clarence Stein and innovate with regard to their surroundings demography at the same time. These case studies attempt to strike that balance and refigure the western norms with an Indian context. Pune and Pimpri-Chinchwad have a demographic composition that calls for merging the services, residence and recreation in an effective manner. The two case studies explain two masterplans in the initial stages of development but have clear visions and try to remain true to the concept of neighbourhood and the 100-acre township while simultaneously moulding these concepts into utilitarian and resilient models. They try to fulfil the housing demand in a way that maximum benefit by the consumer in terms of lifestyle is achieved and the service demands are met extravagantly. They take inspiration from the existing models but retain their uniqueness in terms of ideas; this helps us infer that the progressive models of the future neighbourhoods have the ability to deal with the challenges of housing, inclusivity, equity, resilience and sustainability when paired with appropriate urban planning tools. The general practice of neighbourhood planning is amended and one can have a fair idea of ideal neighbourhood models after the analysis.

IV. CONCLUSION

The study demonstrates that a logical land use allocation can help inculcate maximum benefits and strong benefits in a masterplan; it not only draws a connection between the different entities but also prepares a sound base for applying the themes of sustainability, resilience and inclusivity. The housing choices of people depend on the surroundings and overall habitat due to increased affordability and availability. It is important that city planners formulate novel ideas considering the trends in sustainability and prepare plans to include maximum benefits for people. The Pune and Pimpri-Chinchwad continue to grow towards becoming economic hubs for the nation and employing a huge population of the state, this ensures that the real estate and housing demands will continue to increase; to fast-track their development, neighborhoods must evolve dynamically and suit the requirements of the coming times. This can be achieved by including the best aspects of these case studies in terms of having a futuristic vision and inculcating appropriate planning techniques like land use tools in the cities’ future ventures and can be coupled with the latest innovations in building and constructing technology to achieve all-inclusive neighborhoods. Thus, the concept of a neighborhood can have multiple perceptions and implementation styles but the core idea of accessibility

must remain the same if we aspire to build world class townships.

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