

# Spatial Assessment of Rurban Slums: a New Perspective of Urban Villages



Neha Pranav Kolhe, Krishna Kumar Dhote

**Abstract:** *Urbanisation and proliferation of slums are major challenges for a sustainable large scale development. The rurban slums are created when the settlement of urban village becomes a part of cities during the process of expansions. These rurban slums differ from rest of the slums unlike other slums which are formed by encroaching public and private land, often on untenable land that has incompatible land use. Rurban slums on the contrary are self-contained rural settlement that becomes a part of larger urban agglomeration. This paper is an attempt to understand the peculiar nature of rurban slums and their characteristics which can be utilized for future development.*

**Key Word:** *Rurban, Slums, Morphology, Development*

## I. INTRODUCTION:

Urbanisation has a huge impact on economic, physical and social growth of the cities especially in developing countries like India. Urbanisation causes unprecedented transition from rural to urban. The current world population is 7.2 billion of which 54% of population is residing in cities as per world urbanization prospects. In 1950, 40% of urban population is living in cities of developing countries, today 75% of urban population residing in developing countries that will reach to 82% in the year 2050. By 2050, 53% of urban population will be residing in Asia, of which 11% of urban population will reside in Indian cities.

While cities are the generators of the nation's wealth and income, there are large sections of the poor in cities, especially slum dwellers who are bypassed in this process of growth (Ministry of Housing and Urban Development in India, 2013). According to Government of India, Housing for all scheme-2015 defines slum as "A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities" as detailed out in Housing for all-2022 [1]. UN Habitat has classified slums in two classes according to geographical location i.e. inner city slums and peripheral slums [2].

The peripheral slums are classified in three categories i.e. urban villages, resettled slums and rural villages. Rural villages are the number of old villages, located in the rural areas, which still retain their traditional agriculture based functions and settlement patterns contain a number of significant heritage resources (Department of Urban Development, 2006).

Kapshe has defined Resettled slums as the relocated slum dwellers from the existing untenable slums to an alternative site with dwelling space, basic civic and social infrastructural services [3]. Some of them are relocated to outskirts of city. 'Urban Villages' termed as rurban slums in current paper are 'traditional rural settlements which have been changed and merged with urban areas' or villages which have been incorporated over time into the urban limits of the present city (Department of Urban Development, 2006).

The concept of urban village was first used in Britain in the year 1980 by urban village Group (Aldous) [4]. The Aim of urban village was to achieve more human scale, mixed-use and well-designed places in developed countries (Franklin) [5]. Whereas in developing countries urban villages are rural settlements and the original inhabitants are farmers (Cheng, 2011) [6]. The villages are inhabited by the poor and the transient within squalor and overcrowding environments (WEI, 2007) [7]. Although, Firey explained that urban village are also termed as rurban fringe that has marginal land use not referred according to the distance but has certain degree of accessibility through public transportation [8]. Urban villages are also the migrant enclave that provides housing at very low rent attracted by rural people coming in search of jobs in urban city.

The Urban village doesn't fit to the character of urban area and are abadi area that needs improvement, redevelopment and even clearance [9]. Hence, Urban Villages does not serve best in terms of location but are more feasible to provide comfortable housing for sprawling cities.

## II. GROWTH OF RURBAN SLUMS IN BHOPAL

In the last three decades, the Bhopal planning area has expanded almost 2.5 times, that has engulfed many urban villages in this process of expansion. During the last three decades the slum population is reached from 19% to 65%. As per the survey conducted by Bhopal Municipal Corporation in Nov. 2005, 9.36 lakh population of the city is staying in these slums. The upcoming development plan will encompass 124 villages with population and area 15,59,075 and 80191.48 ha.

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\* Correspondence Author

**Prof Neha Pranav Kolhe\***, Assistant Professor, Department of Architecture and Planning, Maulana Azad National Institute of Technology, Bhopal, India, Email. Id: [neha.jharia28@gmail.com](mailto:neha.jharia28@gmail.com)

**Dr Krishna Kumar Dhote**, Professor, Department of Architecture and Planning, Maulana Azad National Institute of Technology, Bhopal, India, Email. Id: [kkdhote@gmail.com](mailto:kkdhote@gmail.com)

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## Spatial Assessment of Rurban Slums: A New Perspective of Urban Villages

Currently, these villages physically abut major roads and still depend on agricultural activity, landlords still are original farmers, economically are rich by renting houses and have good quality of houses [10]. During the process of expansion many of these urban villages will fall into category of slums (termed as rurban slums in present paper). These rurban slums are the abadi area in which the settlement exist. These settlements that were villages pertains still the essence of rural areas. The recent policy "housing for all -2015" aims at provision of affordable housing for urban poor by 2022. To achieve this, the detailed study of spatial development of Bhopal particularly for urban villages is performed.

### III. DELINEATION OF THE STUDY AREA:

To understand the development of rurban slums (earlier urban village, now considered as slums) two slums are taken as study area that represent the spatial character of rural village as well as urban character. Since these urban villages are within the municipal boundary they are now considered as slums. Although termed as slums the development of each urban village are very different as conventional slums.

Since Urban Village comprise of dual nature of rural and urban settlement. The study of morphological character contains some of the physical character of both rural and urban settlement According to [11], the morphology of rural settlement deals with pattern, typology and form. [12] and [13] has identified land use, accessibility, density and age of the building as morphological indicators for urban area. Since the study also deals with the urban village that is slums now hence morphological indicators for the informal sector are also being studied. [14] has identified dwelling size, dwelling density, number of informal settlement, shape of settlement and settlement pattern as morphological indicators for informal settlement.

Hence, for the study of rurban slums are dealt in two levels landscape and settlement level. The landscape level deals with location and settlement level, density of settlement, typology of settlement, types of roads, accessibility and land use has been considered as morphological indicators.

### IV. PARAMETERS FOR STUDY

#### IV.1 LANDSCAPE LEVEL

The landscape level is also known as environs level [15]. At this level the general locational analysis with respect to geographical location is performed. This spatial analysis does not reflect diverse urban landscape in terms of mixture of different land uses [16]. The location of these slums depends on proximity to major road, market centres, industries, rivers etc [14].

#### IV.2 SETTLEMENT LEVEL

At this level the overall development of settlement blocks are analysed. The physical urban form of the settlement of these rurban slums are described as organic in its overall morphology, which does not necessarily follow the rigid and formal rules of composition [17]. This spatial analysis represents the settlement level land use in detail, typology (detail analysis of kaccha and pucca houses); density is

calculated using lot sizes, building foot prints and number of stories, analysis of road hierarchy, level of compactness and porosity. In most of the cases slums tends to follow the shape of linear features of road, river or railway line, hence their shape remains either elongated or irregular [14]. The density of the settlement depends on the locational parameter and age of settlement [15] and [16].

### V. CASE STUDY OF RURBAN SLUMS

#### IV.2 NEORI GAON, BHOPAL

Neori Gaon was declared urban village in Bhopal Master Plan 1991. Neori gaon was declared slum with the city expansion. The Neori gaon is located 11.4 km away from Railway station and 4 km away from the airport (Figure 1). The settlement is located 1.5 km away from the main road. The settlement connectivity road is very narrow and kaccha in nature.

The Neori gaon is located on a flat land but the edge of the settlement is bounded by railway line on one side and a hill on the other side.

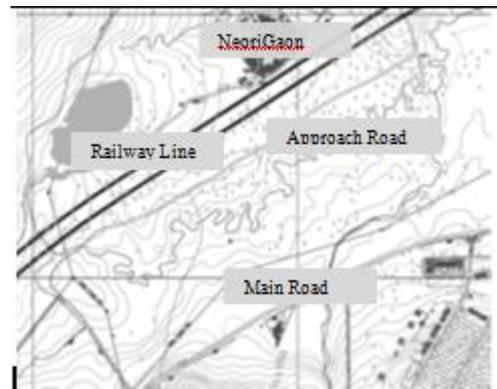


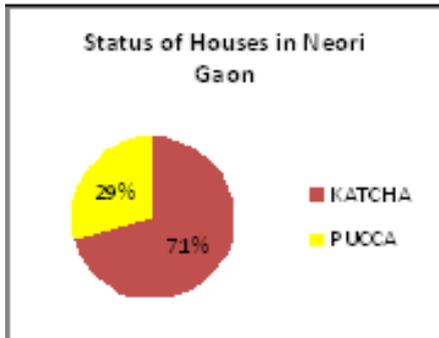
Figure 1 Location of Neori Gaon

#### V.I.I SETTLEMENT PATTERN OF NEORI GAON

Neori gaon is located on the western part of Bhopal. The total population of Neori gaon is 496 and has 174 household residing in the settlement. Neori Gaon is mainly dominated by residential land use as stated in **Error! Reference source not found. Error! Reference source not found.** represent the land use pattern of the settlement, it has to depend on nearby commercial area for their daily needs and the aganwadi is located 200 meter far from the settlement.

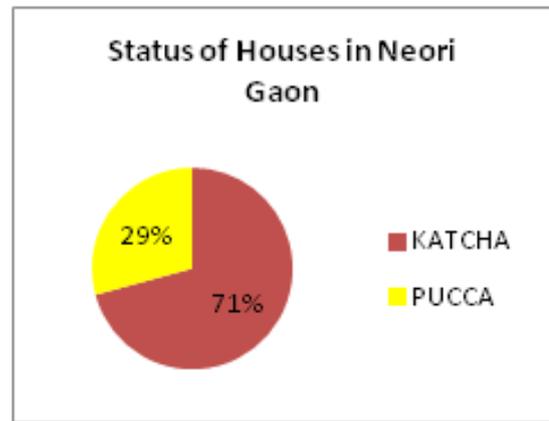
The settlement although dominated by residential land use the type of houses are majorly Kaccha in nature. The NSSO Survey states kaccha houses are the one that has a "structure whose walls and roof are made of non-pucca materials. Materials such

as unburnt bricks, bamboo, mud, grass, leaves, reeds and / or thatch, etc. are considered as non-pucca materials".



**Figure 2: Spatial placement of Kaccha and Pucca Houses**

Figure 2 depicts that 71% of houses in kaccha in nature that is made mud walls and the roof is covered with temporary building materials. 29% of houses are now developed into pucca houses that is developed as framed structure and has used pucca material for construction. TheNSSO states pucca houses has a structure whose walls and roof at least are made of pucca materials like cement, concrete, oven burnt bricks, stones, stone blocks, jackboard (cement plastered reeds), tiles, timber, galvanised or corrugated iron sheets, asbestos sheets etc. Figure 3 represents the type of kaccha and pucca houses in Neori gaon.



**Figure 2: Spatial placement of Kaccha and Pucca Houses**

All the kaccha houses are ground floor structures whereas 50% of pucca houses are raised till first floor.

The landowners prefer to live in pucca houses and have provided their kaccha houses on rent. The average area of the houses is 50-60 sq meter. Figure 4 states the status of typology of kaccha and pucca houses in Neori Gaon. Although building area within the settlement has area in the range of 9 square meters to 237 square meters. But, 62% buildings within the settlement have area within the range of 20-80 square meters with average area of 47 square meters. Whereas about 27 % buildings within the settlement have area more than 80 square meters.



**Figure 3 Kaccha and Pucca Houses of Neori gaon**

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The typology of the road defines the settlement cluster. In Neeri gaon all the roads are well cemented but the average width of road is 3meter to 3.5 meter. The settlement contains only 3 completes road network and contain many dead ends. The road network is very complex because of unplanned road network. The houses can be accessed by two as well as four wheeler and is more suitable for pedestrian walkways.

### V.I.II POROSITY

In Neeri gaon the 26 % of the land act as open space that is sometimes used as small gathering space. Mostly these open space act as roads even that becomes the place of parking, place of gathering and also acts as approach road to the dwelling units.

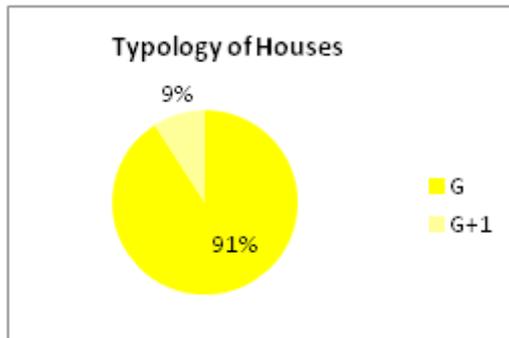


Figure 4 Typology of Houses

## VI. SINGARCHOLI, BHOPAL

Singarcholi was declared urban village in Bhopal Master Plan 1991. Later, Singarcholi was declared slum with the city expansion. It is located 9.2 km away from railway station and 2.1 km away from the airport (Figure 5). The Settlement is located 1.5 km away from the main road. Singarcholi is in close proximity to Bairgarh market and abuts airport road.



Figure 5 Location Map of Singarcholi

### V.I SETTLEMENT PATTERN OF SINGARCHOLI

Singarcholi located on the western part of Bhopal has total population of 1049 people and 331 households. Although Singarcholi is mainly dominated by residential landuse, but there exist commercial activities to satisfy the daily need of population residing in the settlement. **Error! Reference source not found.** represents the landuse pattern of the settlement; the mixed landuse covers 1% of total area that has shops on the ground floor and residence on the above floor. A primary school exist within the area caters the childrens residing in this rurban slum.

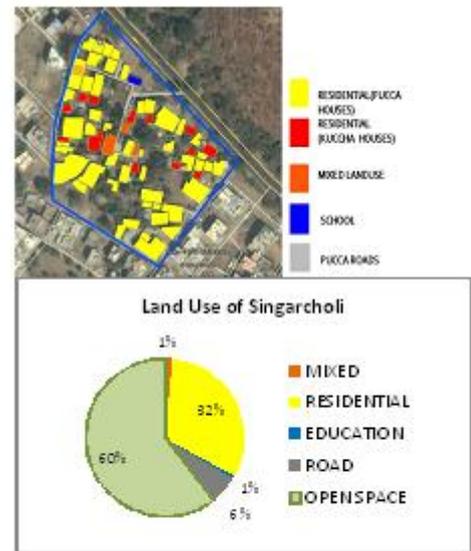


Figure 1 Landuse of Singarcholi

The residential landuse share 32% of the total area that majorly contain pucca houses. Amongst all house 87% of houses are pucca in nature (**Error! Reference source not found.**). The kaccha houses are made of mud walls and pitched roof made of wooden material (**Error! Reference source not found.**).

The pucca houses were built when Singarcholi was an urban village. The building permission can be obtained from local body and the layout plan is approved by Town and Country Planning Organization.

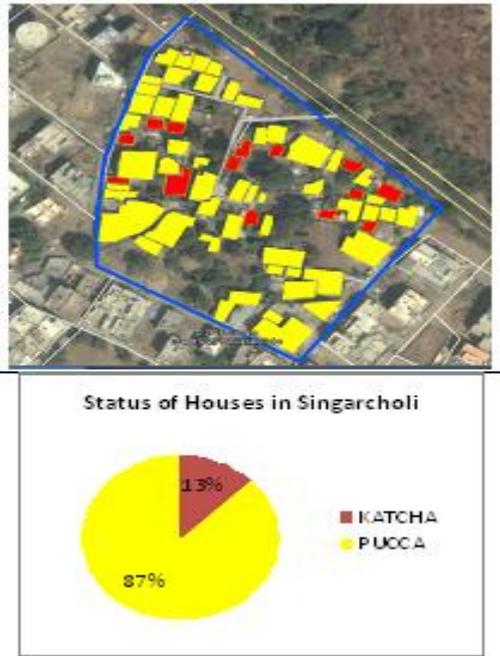


Figure 1 Spatial Placement of Kaccha and Pucca Houses in Singarcholi

Amongst all 65% of pucca houses are two or three storey high, as showed in **Error! Reference source not found.** In reality the landowners posses two to three houses in their tenureship that have been provided on rent purpose.

The scenario of Singarcholi is much better as to Neori gaon. Community gathering space is outside the settlement in nearby temple where all functions, events takes place. The rest open spaces are small gathering space which is used rarely.



Figure 1: Kaccha and Pucca house of Singarcholi

Although building area within the settlement has area in the range of 20 square meters to 600 square meters. But, 55 % buildings within the settlement have area more than 80 square meters with average area of 175 square meters. Whereas about 44 % buildings within the settlement have area within the range of 20-80 square meters with average area of 59 square meters.

The hierarchy of road in Singarcholi is from 2.5 meter to 6 meter in that 6 meter road act as major access road. At times

in these settlements the open space in between acts as small plaza as well as access road. The core interior of the settlement has access to very narrow road i.e 2.5 meter. Although all the roads are motorable, butuneven contour and narrow road width makes difficult access to two and four wheeler vehicles.

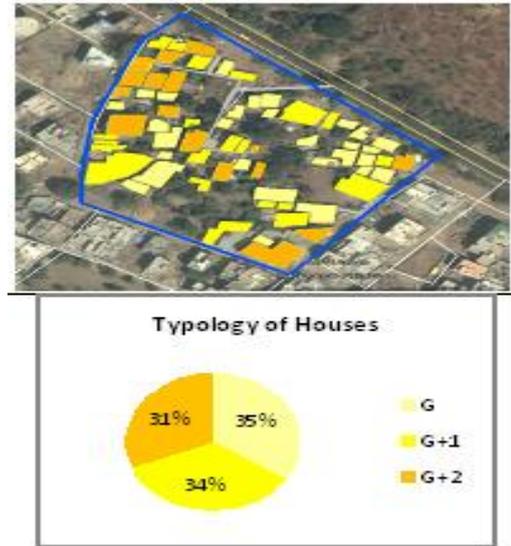


Figure 1Typology of Houses- Singarcholi

**VII.II POROSITY**

In Singarcholi 60% of land is used as open space that is utilized as common gathering space sometimes. Similar to Neori gaon the Open space in Singarcholi is used as dual manner i.e it acts as approach road and also as common gathering place.

**VII. CONCLUSION**

The Neori Gaon has remained in the infancy stage as the location of the Neori gaon is at the interior where the approach road is very kaccha in nature. Whereas Singarcholi has started with the stage of intensification as it abut the main road.Due to the location of Neori gaon, the developments of houses are still kaccha in nature whereas as Singharcholi maximum houses are pucca in nature and are multistorey.

The landuse of both the settlement has maximum component of built up as residential and little component as commercial. The mixed landuse in Singarcholi is majorly shops in ground floor and residences in top floors. Many houses have extra space to keep their livestock (cow, goat) which is utilized as small diary purpose. Some houses has inbuilt tailoring shop that caters to the population of the same settlements.

Both the settlements are still in organic nature where a major house hasOttas in front of them that is used as small sitting space in the front. Both the settlement lacks in proper infrastructure majorly motorable road. Although the road are pucca in nature but the width of the road is very narrow that is because non applicability of bye laws in these settlements, that shall be most suitable for pedestrian walkways.

The average dwelling unit area is 50 sq meter and average built up area ranges from 50sq meter to 150 sq meters.



The recent development of affordable housing lacks in proper understanding the spatial development of the settlement and their needs, that is the basic reason behind the infilling of houses.

The development of these rurban settlements demands for spaces that is equivalent to daily needs and current space with availability of neighborhood parameters within the norms to achieve quality of life.

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