Editorial

This issue of the ITPI Journal features 8 papers. The first paper by N. Usha discusses the 'Impact of Urbanization on Land Use in CMA', examines land use changes between the first and second Master Plan for CMDA by correlating growth of population and changes in land use patterns. The paper finds that 67 per cent of the changes have been made from agriculture to residential category for meeting housing needs of the increasing population, however, 63 per cent of the land use changes also have taken place from primary residential use zone to mixed residential and commercial use zones in order to cater to the demands for commercial, institutional and other allied activities.

A related theme is discussed by Farhana K. in the paper 'Spatial Transformations of Traditional Dwellings: A Case of Kuttichira, Kerala'. Kuttichira settlements are an integral part of Calicut city in Kerala. Uncontrolled urbanization, changes in land uses, growing density of new built-up and socio-economic changes have brought about rapid transformations to the historic fabric of Kuttichira settlements. As a result, traditional structures known as tharavadus are neglacted during development and are gradually changing into isolated elements in the transformed fabric, mainly for economic reasons. This paper attempts to assess these economic activities in domestic spaces within the context of potential of settlements to accommodate new functions by using heritage conservation as a tool for urban regeneration of Kuttichira settlements in the existing fabric.

Perceiving urbanization as a change agent, Dinesh Singh has written a paper titled 'Experiences from Informal Settlements: A Case of Banganga, Bhopal, Madhya Pradesh'. Urbanization is an index of transformations from traditional rural economies to modern industrial towns and cities. Rapid urbanization and inadequate capability of cities to cope with housing needs of people in urban areas have contributed to many socio-economic and environmental issues. The present study highlights the experience of New Market in terms of social, cultural, economic activities, taking Banganga, one of the dense informal settlements in close proximity to the market area called New Market, a central business district, as case study.

Sasmita Rout's paper 'A Glance on Gulbarga City: Orders within Disorders' focuses on the restructuring of Gulbarga City, an old and historical city where many old buildings are being restructured especially along roads approaching Timapuri Circle from the super market. Despite this, Gulbarga still holds rural characteristics in many ways, which is reflected in its street pattern. The author is of the view that this in turn makes the city more lively and interactive. The paper also shows that at a glance Gulbarga may appear disordered, but there is order within these unstructured and chaotic spaces. Another vehicle of restructuring is the Smart Cities Mission albeit in the form of technology centric urbanization. The paper titled 'Smart Cities Mission: A Case of the Indian Urban System' is written by Ashwani Luthra. Smart Cities Mission (SCM) is a prestigious and ambitious plan of central government with

an objective to better the quality of life of Indian cities through retrofitting, city renewal, city extension and PAN city initiatives. However, the author observes that the lack of vision about future urban pattern of the country by central and state governments and role of political influence in the selection of smart cities might entrench imbalanced distribution of urban population and polarized urban system. The author also highlights the possible implications as a way forward for further research once the smart city projects get implemented.

A paper on 'Evaluating Traffic Circulation System: Possibilities and Practicalities in Sardarpura, Jodhpur' is written by Ansuya Tater who argues that orderly development of a community needs safe, efficient and convenient circulation system for people of all ages. This research discusses circulation system of a spatial unit and focuses on unit form and its functionality to identify to what extent future development responds to the existing context, contributes to the visual image of the area, and addresses functional requirements, such as safe and efficient circulation. Another paper on transport planning is written by Dakshayini R. Patil and Mamatha P. Raj. The paper is titled 'Urban Neighborhoods and Walkable Mobility: An Overview of Planning and Design Principles'. Neighborhoods are primary components in towns and cities while urban spaces are their lifelines. People are the main elements, which make such spaces successful. Making residential neighborhoods pedestrian friendly is a step towards achieving sustainable urban development. This paper attempts to provide an overview of such principles and models of growth of towns and cities as implemented; through case studies by understanding the salient features of design aimed at people inclusive perspectives.

The last paper titled 'Residential Rental Housing Environment in India' is written by Anwesha Chakrabarty. This paper is an attempt to understand the present condition of residential rental housing in India. Not being supported by government initiatives, this thriving market has flourished on its own varying from place to place based on the prevailing requirements. About one-tenth of the households in India lived in rented houses in 2011, of which four-fifths households lived in rented houses in urban areas. With more families able to depend on rental properties, rental housing avenues in cities have to be standardized. Enabling the development of a healthy formal rental-housing sector is significant step forward for social well-being.

Dr. Ashok Kumar
Editor

Content

INSTITUTE OF TOWN PLANNERS,
INDIA Library Guidelines

1. Following members of the Institute shall be only eligible to borrow / refer books.

   (a) Fellows (b) Associates (c)   Students appearing for AITP Examination.

2. Entry to the Library shall be permitted on showing ID Card issued by the ITPI. The Institute reserves right of entry into the Library.

   (a) No belongings shall be permitted to be taken inside the Library.

   (b) Silence shall be maintained in the Library.

   (c) In case of loss or mutilation of Library card, the following shall be charges for issuing of duplicate card.

   Loss of Cards : Rs. 100 per card. Mutilated Cards : Rs. 50 per card.

3. Persons, other than those mentioned in Section 1 of these guidelines, may refer to books in the Library on showing their ID Cards and after signing the visitors' register. They can refer to newspapers and serials but for referring books they will have to fill in a requisition slip. They will not be issued any book even for photocopying.

4. For photocopying a part of a book / journal the reader shall fill in a requisition slip, pay the necessary charges (Rs. 1/- per page) and leave the slip with the Librarian who shall arrange for photocopying and handover the papers when ready.

5. Borrowed books must be returned within 15 days failing which 50 paise per day shall be charged as fine.

   (a) Librarian shall issue the first reminder to return the book after the expiry of 15 days. If the book is not returned, a maximum number of 5 reminders shall be sent at an interval of 15 days by the Librarian.

   (b) After expiry of 15 days from the date of the fifth reminder if the book is not returned, the borrower will forfeit the security deposit and also the right of entry to the Library. The cost of books shall be adjusted against security deposit.

Impact of Urbanization of Land Use in CMA

N. Usha

Abstract

This paper examines land use changes between the first and second Master Plan of CMDA, by correlating the growth of population and changes in land use pattern. The paper observes that land use changes are predominantly carried out from agriculture use zone, which accounted for around 46 per cent of the total reclassifications. Among the uses to which the agriculture use zone has been changed, 67 per cent of the changes have been made from agriculture to residential category for meeting housing needs for the increasing population. The other predominant land use category that has been subjected to change is the primary residential use zone that has been converted into mixed residential and commercial use zones. Around 63 per cent of the land use changes have taken place from primary residential use zone to mixed residential and commercial use zones in order to cater to the demand for commercial, institutional and other allied activities.

1. INTRODUCTION

United Nations Department of Economic and Social Affairs in its report on the World Urbanization Prospects 2014 have stated that Asia accounts for 53 per cent of the World's urban population. As per 2011 census 50 per cent of the World's population live in urban areas and India and China together contribute 32 per cent to world's urban population. UN has also projected that by 2030 approximately 60 per cent of the world's population will be living in cities. Impact of urbanization has resulted in the proliferation of slums, high density of population, congestion, inadequate infrastructure, pollution, environmental degradation, incompatible uses, depletion of natural resources, etc. These problems of cities need to be addressed and its growth needs to be sustained and regulated.

Urban planning is a powerful professional practice both for reducing the overall impact of settlements on the local or regional environment and for improving conditions within settlements. Regional plans master plans, and structure plans are all prepared at macro level, and unitary plans and detailed development plans, infrastructure plans and action plans are prepared at the micro level to facilitate and regulate urban growth. In the Indian context, town and country planning acts enacted by the respective states provide for the preparation of various types of macro and micro level plans for urban areas.

N. Usha, Chief Planner, CMDA and Research Scholar, Department of Geography, University of Madras

Tamil Nadu is the most urbanized state in India with the urban population accounting for 48.45 per cent of the total population of the state in 2011. The state has a dispersed pattern of urbanization. Chennai is one of the metropolitan cities in the country with a steady increase of population and continues to attract large sections of population in search of employment, better infrastructure and social facilities.

Chennai Metropolitan Area spreads over 1,189 sq km and comprises of Greater Chennai Corporation, few municipalities, town *panchayats* and village *panchayats*. Population of Chennai Metropolitan Area has grown from 35.04 lakh in 1971 to 89.53 lakh in 2011. Keeping pace with the increase in population and the need to regulate developments in an orderly manner and also to provide for the necessary land use pattern to accommodate demand for development, the Chennai Metropolitan Area has been covered under two master plans with the First Master Plan being made operational from 1971 to 2008 and the Second Master Plan being enforced from September 2008 to till date. These two master plans have been prepared with set objectives and strategies for spatial planning and the land use pattern created through these master plans reflects the translation of such spatial strategies in physical form. Urban planning is dynamic in nature and the constant need for demand driven developments necessitates changes in the land use pattern to accommodate such changes.

This paper attempts to analyze the changes in land use pattern affected through the process of reclassification during the first and second master plan period in an effort to understand the impact of urbanization on the land use pattern in the Chennai Metropolitan Area. The form of change in the land use pattern on a temporal basis and the category of land use have been taken up for analysis.

2.   LAND USE REGULATIONS IN THE CMA PRIOR TO 1975

It is imperative to understand the nature of land use regulations that were prevalent within CMA prior to 1975 to appreciate the regulatory framework that was introduced in the First Master Plan for CMA. Land use regulations in the Chennai Metropolitan Area prior to 1975 was not significant with the focus on preserving land uses that existed at that point of time rather than channelizing the proposed developments by optimizing the land and other resources in planned manner. Only a few areas within the city were covered by the Detailed Town Planning Schemes and a few restrictions were imposed by the Tamil Nadu Public Health Act, 1939 for locating industries and residential areas.

Land subdivision regulations prior to 1975 in the CMA were limited to the control of making public and private streets under the local body acts and they were not framed either to discourage such developments in areas where they are not suitable or divert them to the areas where they are suitable. Further they did not provide for necessary statutory standards for roads, open spaces and other essential infrastructure.

3. LAND USE REGULATIONS UNDER THE FIRST MASTER PLAN FOR THE CMA

Master plans are perceived as a traditional planning tool for urban local governments to allocate land for various urban uses, regulate developments for providing necessary infrastructure in urban areas. Master plan is basically an exercise of resource planning, generation, development and management. Master plan basically lays down the framework for guiding and regulating future growth for a given area through the following instruments.

- Land Use Assignment Zoning Plan that determines the use of each land parcel in the identified planning area.

- Structural road network plan that guides development of trunk infrastructure in the development area.

- Development Control Regulations that determine the built form in the development area.

The First Master Plan for CMA came into force on 5 August 1975 and it laid down policies and programs for the overall development of CMA. The main strategy of the First Master Plan was to reduce congestion within the core city of Chennai through development of radial corridors linked to the development of satellite towns and urban nodes. In order to encourage economic development, it also proposed to locate large scale industries in the hinterland of CMA to provide employment opportunities in satellite towns. The land use plan was based on the above strategies and the requirement of land for various uses was based on the projected population of 7.1 million for CMA by 2001 including 4 million population to be accommodated in Chennai city. The existing land use pattern in 1973 for Chennai city and the rest of CMA and the proposed land use pattern for Chennai city and the rest of CMA for the horizon period of the plan is presented in Table 1 and 2 and Figs. 1 and 2.

Table 1: Existing Land Use – 1973 (First Master Plan)

Land Use	Chennai City		Rest of CMA		Total	
	Extent in ha.	%	Extent in ha.	%	Extent in ha.	%
Residential	7788	44.46	9144	8.67	16932	13.77
Commercial	820	4.68	68	0.06	888	0.72
Industrial	893	5.10	2976	2.82	3869	3.15
Institutional	3045	17.38	2260	2.14	5305	4.31
Open Space and Recreational	920	5.25	4822	4.57	5742	4.67
Agriculture			73689	69.88	73689	59.92
Non Urban			1633	1.55	1633	1.33
Others	4052	23.13	10865	10.3	14917	12.17
Total	17518	100	105456	100.00	122974	100.00

Source: First Master Plan for CMA

Table 2: Propose Land Use (First Master Plan)

| Land Use	Chennai City		Rest of CMA		Total	
	Extent in ha.	%	Extent in ha.	%	Extent in ha.	%
Primary Residential	10888.05	61.80	22554.94	22.27	33442.98	28.12
Mixed Residential	127.95	0.73	8095.69	7.99	8223.64	6.92
Commercial	521.95	2.96	970.81	0.96	1492.76	1.26
Institutional	3080.67	17.49	3395.39	3.35	6476.07	5.45
Light Industrial	263.11	1.49	285.73	0.28	548.84	0.46
Special & Hazardous Industrial	39.97	5.30	3970.34	3.92	4904.60	4.12
Open Space and Recreational	1448.99	8.22	6848.67	6.76	8297.66	6.98
Agriculture	94.47	0.54	37084.34	36.61	37178.82	31.26
Non Urban	113.01	0.64	979.48	0.97	1092.49	0.92
Others(Forest, water bodies, Road, etc.)	105.26	0.60	15672.65	15.47	15777.91	13.27
Total	17617.70	100	101298.42	118916.12	122974	100.00

Source: First Master Plan for CMA

Fig. 1: Existing Land use – MMA – (First Master Plan)
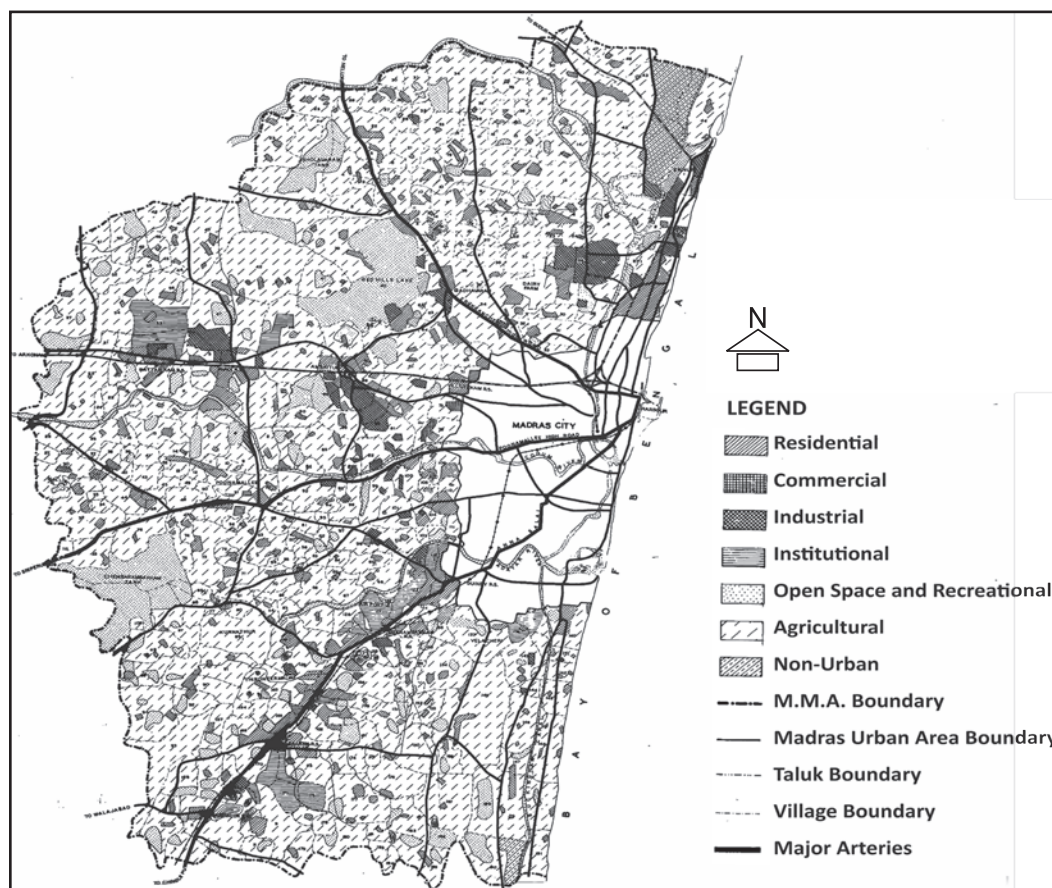
Source: First Master Plan for CMA

Fig. 2: Proposed Land Use – MMA – (First Master Plan)
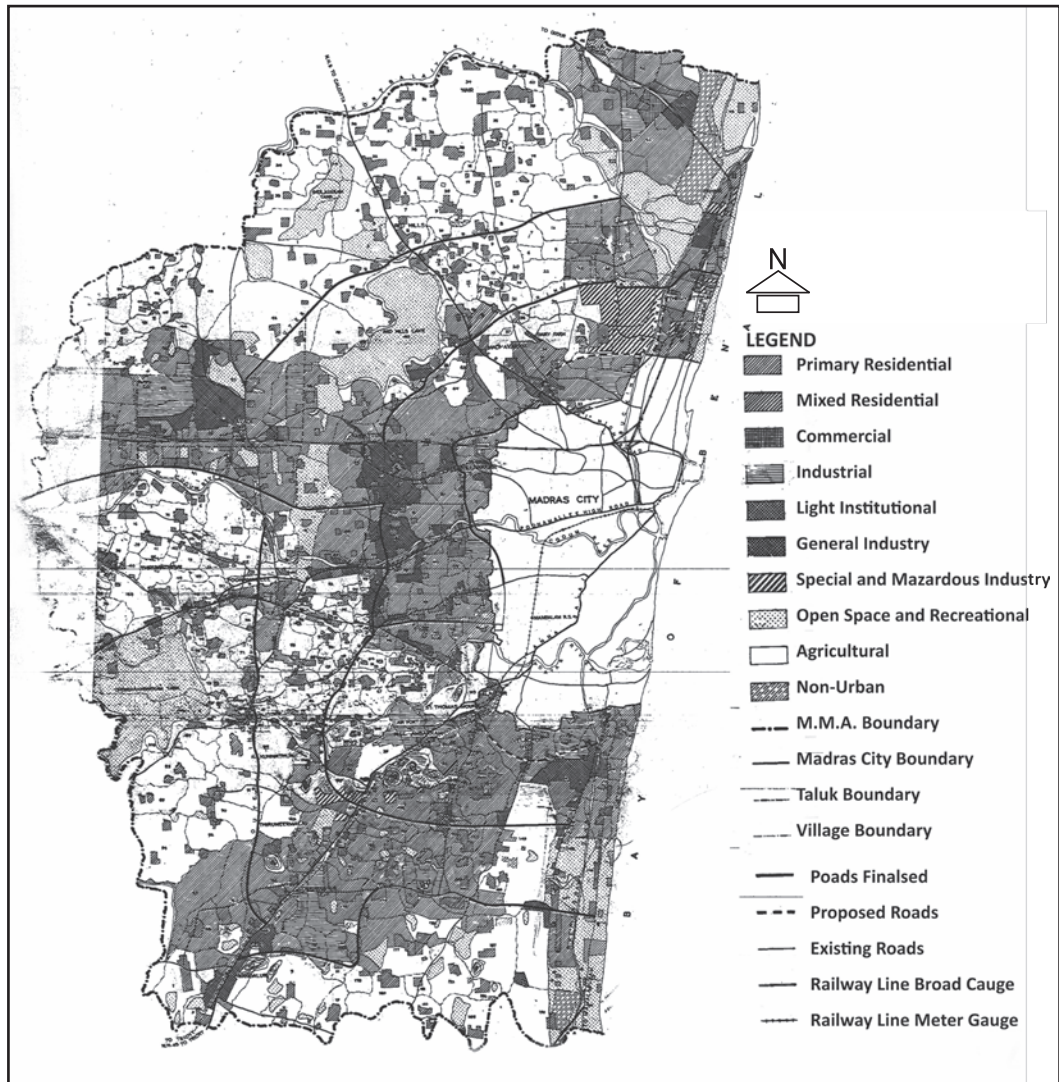
Source: First Master Plan for CMA

It may be observed from above Tables and Figures that the area earmarked for residential purposes including primary residential and mixed residential categories constitutes 28.12 per cent and 6.92 per cent respectively keeping in line with the anticipated increase in population and requirement of land to accommodate their need for housing and other facilities.

4. LAND USE REGULATIONS UNDER THE SECOND MASTER PLAN FOR CMA

The Second Master Plan for CMA came into force on 2 September 2008 with the horizon year as 2026 with the vision to make Chennai a prime metropolis, which will become more liveable, economically vibrant, and environmentally sustainable with better assets for the future generations. The existing urban

form, the projected population for the plan period and the requirement of land for various uses were considered as the basis for assigning land uses and for arriving at the land use plan for the horizon year.

The broad objectives adopted for finalizing the spatial plan in the Second Master Plan includes the optimum utilization of land by channelizing developments in the right directions and locations, recognition of existing growth trends and infrastructure availability, providing efficient transportation networks for integrating residential developments with shopping, work and recreation areas, and preservation of ecologically sensitive areas and natural built environment.

Keeping the principles of zoning under consideration, the Second Master Plan adopted the concept of mixed land use to encourage growth of compatible activities and to accommodate the existence of large informal sector. The concept of mixed land use zoning has been in existence since the First Master Plan. Further, in order to provide a wide range of uses that can be permitted in a zone, the Second Master Plan has designated a new zone namely the urbanisable zone in addition to the other nine designated uses namely primary residential, mixed residential, commercial, industrial, special and hazardous industrial, open space and recreational, agricultural and non-urban use zone.

The purpose of creating an urbanisable zone is to eliminate the unnecessary freezing of land uses, which would normally happen if a particular use, which may not find favour in locating in that area is specified in advance. The urbanisable zone facilitates most environmentally safe urban uses paving the way for demand driven developments to take place without affecting the quality of life in the neighborhood.

Table 3: Existing Land Use 2006

| Land Use	Chennai City		Rest of CMA	
	Extent in ha.	%	Extent in ha.	%
Residential	9523	54.25	22877	21.87
Commercial	1245	7.09	390	0.37
Industrial	908	5.17	6563	6.28
Institutional	3243	18.48	3144	3.01
Open Space and Recreational	366	2.09	200	0.19
Agriculture	99	0.57	12470	11.92
Non Urban	82	0.47	2433	2.33
Others (vacant, forest, hills, low lying, water bodies et.)	2087	11.89	56507	54.03

Source: Second Master Plan for CMA

The existing land use pattern for Chennai city and the Rest of CMA in 2006 and the proposed land use pattern for Chennai city and CMA for 2026 are presented in Table 3 and 4 and Figs. 3 and 4. It may be observed that 31.68 per cent and 13.34 per cent of land has been earmarked in the rest of the CMA for primary

Fig. 3: Existing Land Use – CMA (2006)
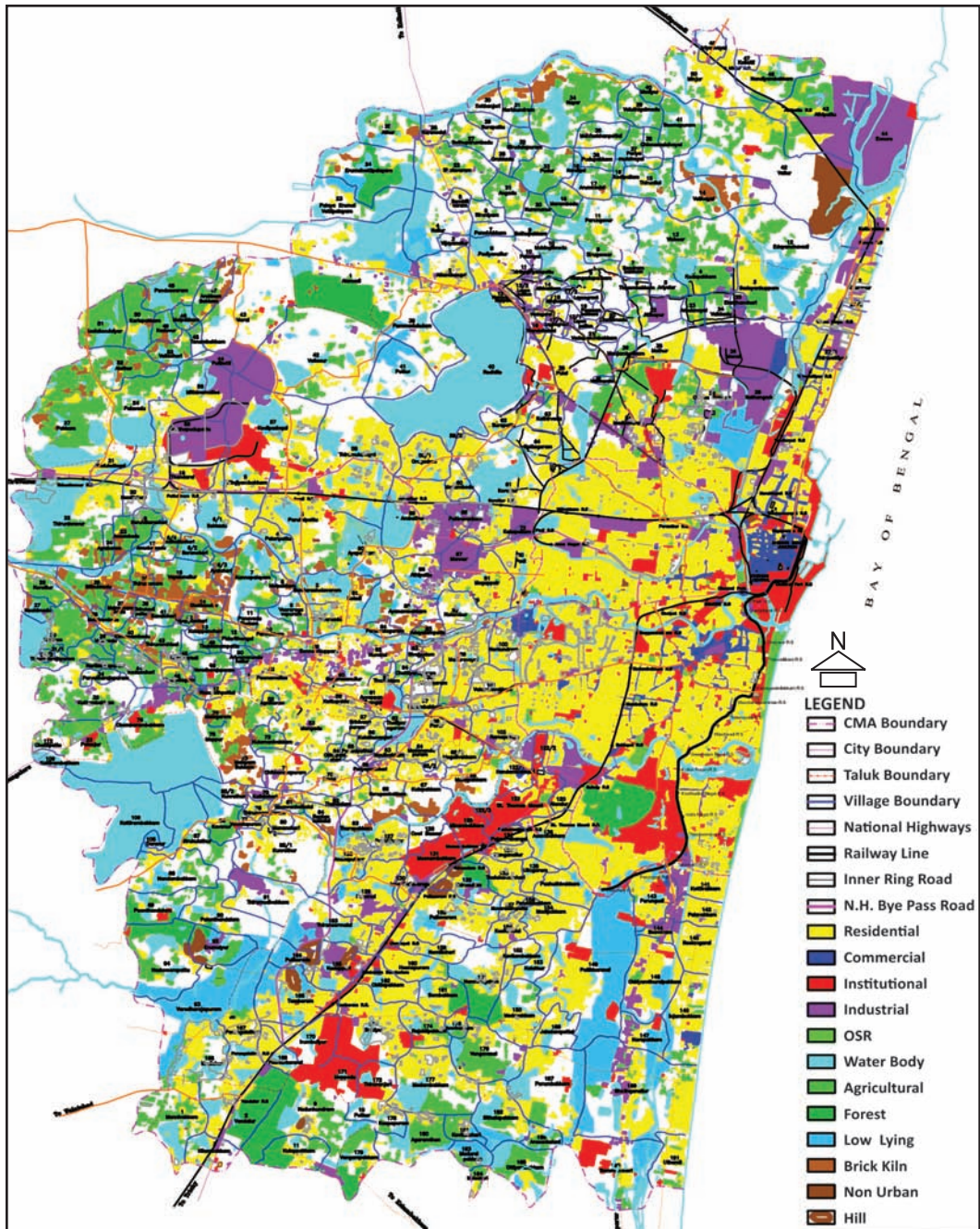
Source: Second Master Plan for CMA

Fig. 4:   Proposed Land Use – CMA – (2026)
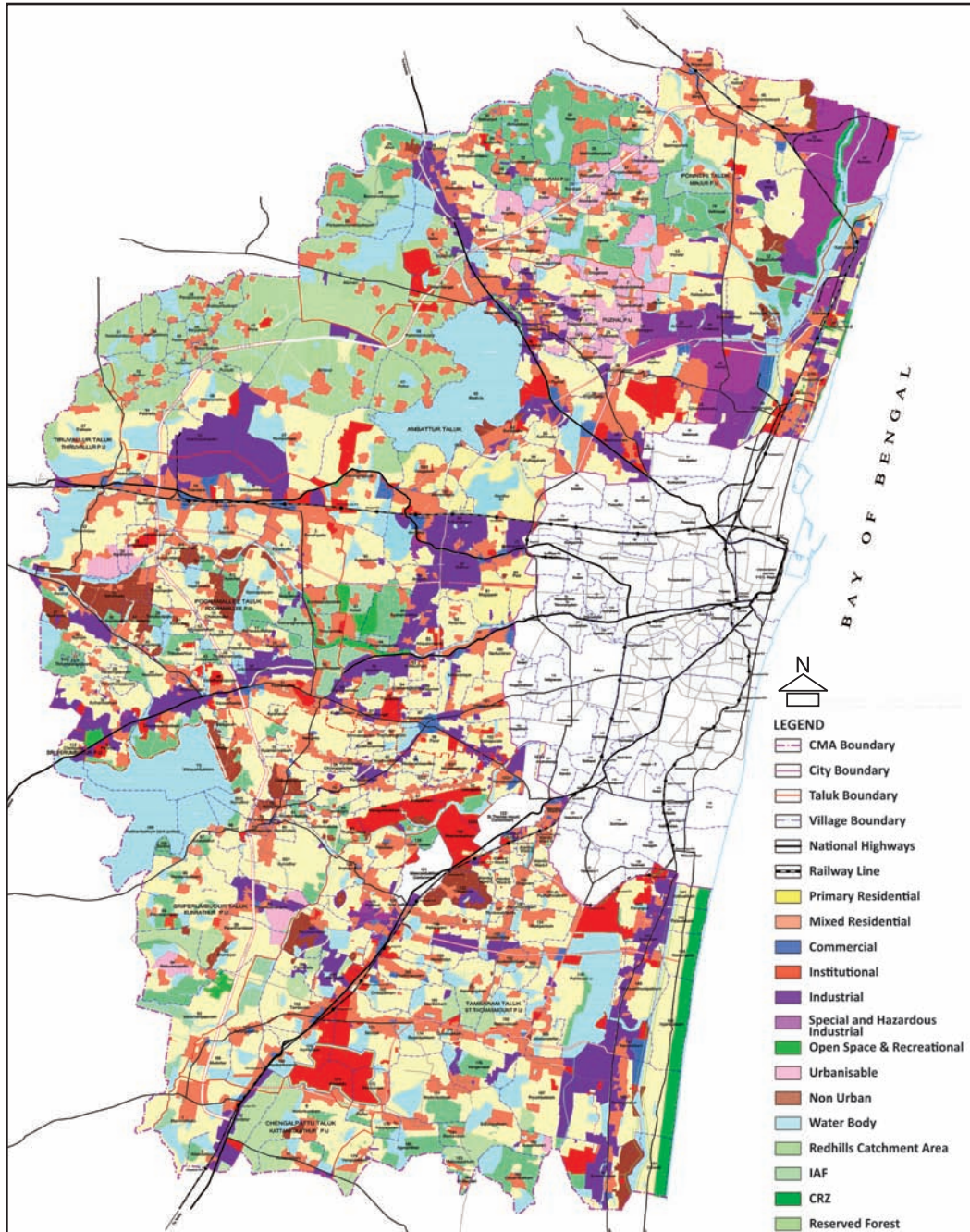
Source: Second Master Plan for CMA

residential and mixed residential use zones and in addition 2.05 per cent of land has been earmarked for the newly introduced urbanisable use zone to accommodate housing and other needs of the projected population during the plan period.

Table 4:   Proposed Land Use - 2026

Land Use	Chennai City		Rest of CMA	
	Extent in ha.	%	Extent in ha.	%
Primary Residential	5916.35	33.58	31090.68	31.68
Mixed Residential	2426.90	13.78	13503.10	13.34
Commercial	714.24	4.05	880.35	0.86
Institutional	2868.97	16.28	3888.85	3.83
Industrial	691.83	3.93	7274.33	7.18
Special & Hazardous Industrial	130.67	0.74	3416.08	3.38
Open Space and Recreational	1000.65	5.68	392.86	0.38
Agriculture	-	-	7295.81	7.20
Non Urban	113.31	0.64	2332.92	2.3
Urbanisable			2075.89	2.05
Others (Roads, water bodies, hills, Redhills, catchment area forests etc.)	3754.79	31.31	28147.55	27.79
Total	17617.70	100	101298.42	100

Source: Second Master Plan for CMA

5.   LAND USE CHANGES IN THE CMA

Idea of zoning is that the segregation of certain uses from others to reduce the negative effects or negative externalities, which some uses have on others. Zoning provides spatial segregation of conflicting uses. It also has the benefit of increasing positive externalities because many uses find an advantage in being grouped with other uses. These external effects include air, water pollution, excessive noise levels, traffic congestion and harm to aesthetics. Because of its predominant role, modern zoning encompasses expanded objectives for supplying certain public goods such as preservation of open space, prime agriculture land and ecologically sensitive areas also. Zoning is also desired for reduction of costs for providing certain public services.

However, the reservation of a parcel of land for a particular land use encountered certain challenges including the following:

- Optimum development of a particular site gets affected when the site is zoned for more than one land use zone;

- Expansion of existing activities curtailed due to non-conforming land use zone;

- Sites zoned for open space and recreational use and institutional use zone are not put to use as these sites are not acquired by government. This provides hardship to the owners of such lands; and

- Zoning is oriented towards the provision of safety, convenience and tranquility in the area rather than encouragement of housing, industries and employment.

Above issues are basically the manifestations of the increase in the level of urbanization and the resultant demand for housing and other facilities that necessitates the conversion of land from one use category to another. The demand for developments are market driven and in order to provide the necessary right to change the land use classification stipulated in the Master Plan, Section - 32 (4) of the Tamil Nadu Town and Country Planning Act, 1971 which provides for reclassification of one land use category to other land use. Land owners apply for reclassification and such requests are examined and decided on individual merits based on the provisions of the Act. Provision for reclassification enables flexibility in land use zoning by catering to the demand created by large scale urbanization for the provision of housing and other facilities.

Land use changes have been effected by following due procedures for reclassifications ever since the First Master Plan for CMDA came into operation on 5 August 1975. This research paper has attempted to analyze the changes in the land use pattern during the First Master Plan period and under the Second Master Plan period till 2016. The data on reclassifications effected from 1977 to 2016 have been classified based on administrative jurisdictions to understand the trend in terms of growth in population in the respective constituent units. The data has been grouped based on the administrative units i.e. City Municipalities, Town *Panchayats* and *Panchayat* Unions and an attempt has been made to correlate the growth of population and changes in the land use pattern.

The growth of population of the city and the Metropolitan Area from 1971 to 2011 is presented in Table 5; which indicates that there has been a steady increase in the growth rate of population both in the city and the rest of the Metropolitan Area from 1971 to 2001 while the rest of the Metropolitan Area has registered an annual growth rate of almost 6 per cent during the decade 2001-11. On the other hand the growth of population in Chennai city has stabilized and has registered an annual growth rate of 0.7 per cent during 2001-11.

The above scenario indicates that there is a huge demand for land to meet the requirements of housing and other facilities in the rest of the Metropolitan Area.

Table 5:   Growth of Population (in Lakh)

Sl. No.	Description	1971	1981	1991	2001	2011
1	Chennai City	26.42	32.85	38.43	43.44	46.49
2	Rest of CMA	8.62	13.16	19.75	26.97	43.04
	Total	35.04	46.01	58.18	76.41	89.53

Source: Census of India

N. Usha

Table 6:   Land Use Changes in CMA (1977-2016)

Sl. No.	Year	City	Municipality	Town Panchayat	Panchayat Union	Total
1	1977-81	3	11	5	3	22
2	1982-86	113	40	99	114	366
3	1987-91	90	24	54	196	364
4	1992-96	101	42	51	128	322
5	1997-2001	92	13	37	120	262
6	2002-2006	46	15	44	116	221
7	2007-2011	62	25	20	114	221
8	2012-2016	74	26	16	78	194
	Total	435	140	287	681	1543

It is against this background that the data on land use changes over the past 40 years period (1977-2016) has been compiled and analyzed. Table - 7 provides the details of land use changes carried out in the various constituent units of CMA.

Among the constituent units, village *panchayats* accounts for around 44 per cent of the total reclassifications in view of availability of sub-urban rail transport facility both towards north and south in the Metropolitan Area. The period between 1982 to 1996 has witnessed more number of land use changes as it was during this period that large scale of construction of scatted developments were taken up within the Metropolitan Area. The increase in the number of land use changes in the city during 2012-16 may be attributed to the expansion of the City Corporation limits by including certain municipalities, town *panchayats* and village *panchayats*.

Table 7:   Details of Land Use Changes from One Category to all other Categories (1977-2016)

Land use from/ Land use to	Primary Residential	Mixed Residential	Commercial	Industrial	Special Hazardous	Institutional	Open space and Recreational	Agriculture	Non Urban	Total
PR	6(EWS)	269	125	100	13	93	3	14		617
MR	8	-	17	31	2	4	-	6		68
COMM	4	-		10	-	-	-	-	-	-
INDL	39	7	1	1	1	5	1	6	-	61
S&H	5	5		2	-	2	1		-	15
INST	92	26	15	11	-	-	4	2	-	150
OS &R	60	14	12	30		8		6	-	130
AGRI	603	36	28	164	11	42	8		17	909
NU	20	2	6	4		6	-	-	-	38
TOTAL	831	359	204	353	27	160	17	34	17	1988

RECLASSIFICATION WITHIN CITY & CMA 2006-2016

The pattern of land use changes has also been analyzed in terms of the most predominant category of land use to which changes have been effected to provide an insight into the nature of demand for various activities. Table - 7 provides the details of land use changes from one category to all other categories. It may be observed that land use changes are predominantly carried out from agriculture use zone accounting for around 46 per cent of the total reclassifications. Among the uses to which the agriculture use zone has been changed, 67 per cent of the changes have been made to residential category to accommodate the housing needs for the increasing population. The next predominant land use category that has been subjected to change is the primary residential use zone that has been converted into mixed residential and commercial use zones. Around 63 per cent of the land use changes from primary residential use zone have been towards mixed residential and commercial use zones to cater to the demand for commercial, institutional and other allied activities. Lands earmarked for open space and recreational use zone has also been changes to residential and commercial use zones to a certain extent.

6.   CONCLUSIONS

Land use planning is a dynamic process and zoning of lands for various activities undergoes constant changes based on the increase in population and its demand for land to accommodate human requirements. Hence zoning laws are provided with necessary flexibility to accommodate such changes without compromising on ecological and environmental considerations. The analysis carried out on the nature and type of reclassification within the Chennai Metropolitan Area after the Second Master Plan 2008 indicates that only 0.04 per cent of land has been reclassified from the original land uses proposed in the First Master Plan since the approval of the Second Master Plan for CMA in 2008. The demand for change of use is observed in the *Panchayat* Union areas due to increase in the growth of population and availability of land to accommodate housing and other needs of people. Urbanized use zone has provided the opportunity for accommodating compatible land uses without resorting to reclassification.

REFERENCES

CMDA (1975) *First Master Plan for CMA*, CMDA, Madras.

CMDA (2008) *Second Master Plan for CMA*, CMDA, Madras.

Tiwari, D.P. (2002) *Challenges in Urban Planning for local bodies in India; GIS Development*.

United Nations Department of Economic and Social Affairs (2014) *Report on the World Urbanization Prospects*, United Nations.

Spatial Transformations of Traditional Dwellings: A Case of Kuttichira, Kerala

Farhana K.

Abstract

Kuttichira settlements are an integral part of Calicut city in Kerala. Uncontrolled urbanization, changes in land use, growing density of new built-up areas and socio-economic changes have brought rapid transformations to the historic fabric of Kuttichira settlements. As a result, traditional structures known as tharavadus are neglected during development and are gradually changing into isolated elements. However, despite limitations, the domestic spaces of the buildings are transforming mainly for economic reasons and increase in the number of family members as a survival strategy of residents. This paper attempts to assess these economic activities in the domestic spaces made within the context of potential of settlements to accommodate new functions, by using heritage conservation as a tool for urban regeneration in the existing fabric and outlines planned interventions to protect the traditional dwellings from decay and provide visual exposure in the present urban fabric.

1. INTRODUCTION

Heritage buildings and cities provide us with strong visual spaces pertaining to regional history and form, comprising the basis of local culture. In the contemporary world scene, the built form cultural heritage seems to be generally ignored into oblivion. Heritage and historical buildings are the sources and physical references of past cultures and settlements, thereby representing the resources to learn about past history. These are the physical references that help individuals learn about architectural styles, structural systems, construction techniques, use of materials, space organization, scale proportion and other aspects. (Robertson, 1992) The processes of urban development have had enormous impacts, not only on national economies but also on the physical reshaping of traditional areas (Robertson, 1992). The rapid physical transformation of older, traditional centres is now taking place in many Third World cities.

Natural and Cultural Heritage thus need to be conserved with effective conservation policy taking into account public involvement, public and private initiatives, the planning process, cultural and economic needs and the maintenance of public openness during the decision-making process (Cohen,1999). The physical refurbishment of historic city centres provides the means for social renewal of communities and neighborhoods, economical

Farhana K., Masters in Environmental Planning, School of Planning and Architecture- Delhi, farhanajune16@gmail.com

attraction and enhancement of the quality of life. The integration of heritage structures with the new development can be attractive and economically feasible if proper guidelines are set in place.

Urban regeneration is a comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, and environmental condition of an area that has been subject to change. As such, urban policy makers should recognize heritage conservation and urban regeneration as a form-function phenomenon that is impacted by a series of intervention decisions (Shaw. G, 1991). Wang and Lee (2008) draw attention to the importance of the local history, cultures and the unique traditions of cities in attracting tourists and promoting economy as a way of managing sustainable urban development.

The aim of this study is to analyze the spatial and socio-economic transformation and frame a development strategy to link urban regeneration to heritage conservation, and also to showcase the issues of settlement transformation that happens with the transformation of dwelling units in traditional settlements.

2.   ABOUT KUTTICHIRA

Kuttichira, earlier a port town is located in Malabar area in the state of Kerala. Malabar, which is the region now distinguished by its distinctive cultural identity rather than geographical limits, is spread along the west coast, comprising predominantly the northern portion of Calicut in the state of Kerala, at the southern tip of India. The traders from distinct lands arrived at the ports of Malabar, since Sailing was the only mode of transport between continents. Malabar was famous for its richness in spices. The arrival of Arabs to the spice rich region, its caste equations and the welcome extended to the visitors by the rulers lead to the spread of Islam and the birth of the first Islamic community in the country as early as in the 7th century. They are known as the Mappilas. This started in Kuttichira, which was the port town then. There were many factors which accelerated the spread of Islam in Kerala, especially the Northern coast. They were mainly the Intermarriage with the local Hindus, known as 'Muta' marriage, Patronage of the native rulers and the prevailing caste rigidity in Hinduism. This led to a blend of the Arab and Nair cultures giving rise to a new spatial structure being represented through the built forms in the area. The unique architecture of Kuttichira is a rare appearance of the Islamic culture introduced by the Arab trading community which was built with the expertise of native traditional craftsmen. This is an impression of Islamic culture. These buildings become the proof of the important history and evolution of Calicut and stand as an evidence to the communal harmony that existed in Malabar.

During the Sangam age, Calicut known as Kallikkottai in Tamil formed part of the Chera Empire. In 1122 AD, after the downfall of the Cheras, the Zamorians - the Udaiyavar of Ernad – one of the smaller districts under the Chera Empire, conquered Polanad, the fertile hinterland around Calicut for gaining easy access to the sea. Calicut derived its name from its fortified palace – Koyil Kotta. The Zamorins were highly cultured and accomplished rulers. Under their patronage, Kozhikode developed into a major seaport on the coast of Kerala. The Zamorins declared Kozhikode as a free port. Thus, religious tolerance, good administration, which gave security and impartiality to all and the friendly attitude of the Zamorins to all traders, made Calicut the chief centre of trade in Malabar region. The Zamorins gave special concession to Arabs (the Moors) to carry out trade. This led to the propagation of Islam in Kozhikode which in turn has resulted in rich contributions in the field of art and architecture, a fine example of which is the settlement of Kuttichira in general and the Misqual Mosque and 'Valiyangadi '- the market street in particular. Later in 13th century, the Port of Calicut came into existence to enhance trade activities.

In 1498, Vasco da Gama reached the outer roads of Calicut and anchored at Kappad (18 Km North) on 20 May 1498. In 1500, Zamorins started engaging in war with Dutch. In 17th century, British reached Calicut under Captain William keeling and concluded a treaty of trade in which they helped the Zamorins in fighting a war with the Dutch. This also led to the virtual end of Calicut port due to the upcoming of Cochin port. After independence, in 1956, Malabar District combined with the state of Cochin and Travancore to form the new state of Kerala. Initially it had five taluks which later changed into a district with three taluks (Koyilandy, Vatakara, Kozhikode). Residences were formed as an outcome of trade relations and trade activities occurring near the port. The settlement had a tank known as 'Chira' pond. The earliest residential community started living in the relatively higher areas of the site to avoid flooding. This is clearly indicated by structure of settlement. The settlement lies in eastern boundary which was the low lying marshy forest. The western boundary is marked by the Arabian Sea that was the main source of livelihood for the people of the settlement. Due to this, godowns of Arab and Chinese traders that was used for storage of spices and other merchandise is located near the shore. Timber yard expanded in the southern pat of the settlement near the Kallayi River. Following the invasion of Mysore kings, the settlement saw a rapid increase in occupants leading to conversion of lower caste Hindus and building of many mosques. The mosques built then included Idiyangara, Sheikh Palli, and Barami Palli.

The Kuttichira Pond was also extended from its initial form to its current form under the order of Tipu Sultan. For the period of the British rule, the wholesale trade started to boom, thus leading to the inflow of Gujarati merchants, whose

Fig. 1: Evolution of Kuttichira from 12th-17th Century
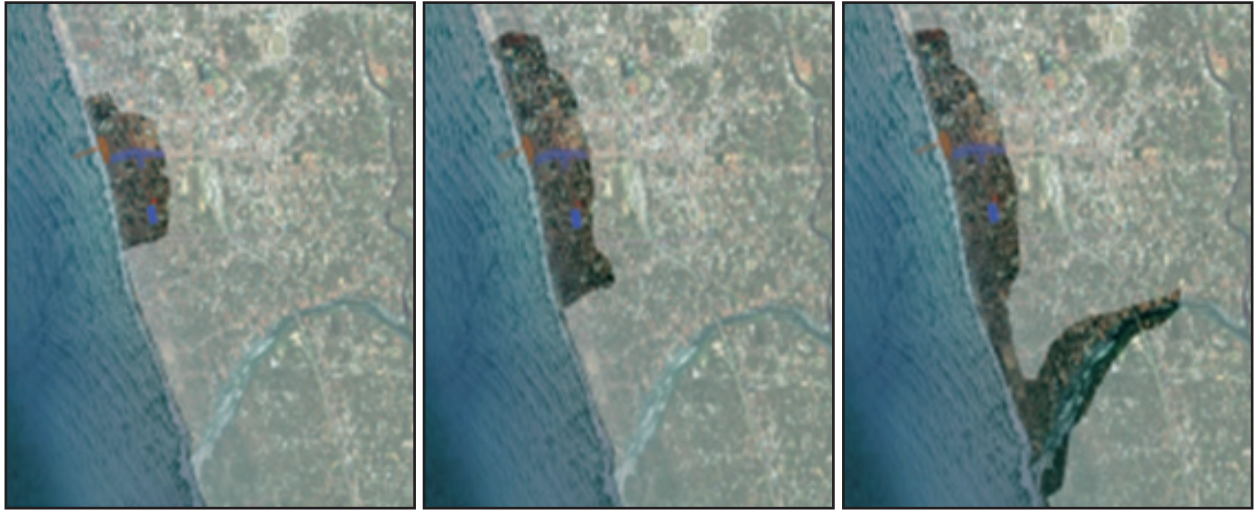
Source: Author 2015

families settled on the north-western part of Kuttichira with a close proximity to the wholesale market (Valliyangadi). Marshy areas present were replaced by the railway station, which connected the city of Kozhikode to other parts of the country and region. Due to construction of railway lines by the British led to confined growth of the settlement between railway line and beach. The growth of the city started towards the eastern part of the area. Later, after independence, this area, a part of Calicut district joined with other districts to be a part of the State Kerala (Fig 1).

3. LITERATURE REVIEW

3.1 Heritage

Heritage is a very broad and holistic term. There are many definitions for the term heritage. Howard (2003) considers heritage as 'everything that people want to save'. CPWD describes Heritage as those buildings, artefacts, structures and precincts that are of historic, architectural, aesthetic or cultural importance and should include natural features within precincts of environmental importance or scenic beauty such as sacred groves, hills, hillocks, water bodies (and the areas adjoining the same), open areas, wooded areas, etc. (CPWD, 2013).

The conservation of built heritage is generally professed to be in the long term interest of society. This can be better known if categorized under 'economic', 'cultural', and 'environmental', although they are not mutually exclusive. Most buildings are capable of beneficial use, whether for their original function or for some other use. Buildings and their precincts has to be used in order to survive, and such use can be made into an economically workable enterprise, if

required. According to miller, heritage is a sense of continuity and belonging that is different for each person (Orbasli 2000).

According to operational guidelines for the execution of the world heritage convention, a world heritage site can be classified into cultural site/ natural site/ mixed site. Taking the case of cultural heritage, it has two categories; namely, tangible heritage and non-tangible heritage. Tangible heritage is that which is in material form. It includes monuments, buildings; works of art, etc. intangible heritage include the heritage that exists in immaterial form, examples under this category include literature local traditions, languages, music, dance, etc.

3.2   Heritage Conservation

Heritage conservation does not mean freezing a structure in time, creating a museum or tying the property owner's hands so they can't do anything with their properties. Instead, it should maintain and increase the value of buildings by keeping their original built form and architectural vocabulary, focusing on their restoration rather than replacement and, when restoration is impossible, recreating scale. Heritage conservation can help to visualize the diversity of urban form and to explore their cultural, the political and historical character, of the urban areas. Heritage conservation can also hold up to dig out some crucial incidents and events that might have induced major changes in the development trends, and the town scape. In a way the conservation of heritage is a crucial factor in the urban fabric of the city and long-term prosperity of a city. Furthermore the participation of community in the process of heritage conservation can bring sustainable results. Heritage conservation is a broader term which needs broader policy for better results by involving the community for getting the sustainability principles (Yasin and Pang, 2005: 4).

3.3   Urban Regeneration

Urban regeneration involves inclusive activities to retrieve the decline in urban areas. This decline could be in the shape of physical, social and/or economic functions in the urban fabric. The urban regeneration process is thus an essential part of urban planning which aims at integrating the decline in the urban society and town scape. Urban regeneration has evolved from a simple form of reformation or rehabilitation to targeting the streamlining and the renewal of the urban economy, and seeking social interaction and impartiality.

Urban regeneration can also be defined as a complete and integrated vision and action which leads to the resolution of urban problems and which tries to bring about a lasting improvement in the economic, physical, and environmental state of an area that has been subject to change. The regeneration approach facilitates not only recovering the physical environment, but empowering the community to

be more active in the development and maintenance of their neighborhoods. In this way, as a stakeholder in the development process, communities effectively become the main drivers.

Urban regeneration is different from urban renewal, urban rehabilitation and urban (re) development as urban renewal aims to gain mainly physical change, urban rehabilitation does not explain the method of actions and urban (re) development has a general task and lacks a well-defined purpose (R. Vincent, 2014:1).

3.4   Heritage Conservation as a Tool for Urban Regeneration

The very nature of urban regeneration is domineering activities (Roberts, 2000: 21). It could be operated through a variety of modes by demolition and redevelopment, through renovation for the current use or conversion for a new use (Tiesdell et al, 1996: 31). But these two modes cannot guarantee the sustainable and vibrant urban life and consistent city fabric. Long-term urban regeneration should thus add in the concept of sustainability as Roberts (2000:17) defines urban regeneration as an inclusive and integrated vision and action which leads to the resolution of urban issues.

Comprehensive policy measures are needed to deal with the crucial issues of dilapidated urban fabric and town scape to take back the sense of living place to protect the social coherence, economic effectiveness and environmental sustainability in urban areas. The inclusive policies for sustainable urban regeneration can be achieved by integrating heritage conservation in the broader outline of urban regeneration.

Another aspect is Community participation, which is an important tool used for the heritage conservation and urban regeneration. Community participation increases the effectiveness and can initiate transparent measures to control the regeneration process. Efficiency in this context is calculated in terms of how well the process serves to solve urban issues. Heritage is a catalyst for proper urban regeneration. A complete policy for heritage conservation by involving the community as a partner and involving heritage conservation in the process of urban regeneration can lead a way to proper development. The results of suitable development in traditional areas can be attained by achieving social coherence, economic viability and environmental enhancement by the inclusive policy for sustainable urban regeneration (Yaseen and Pang, 2005).

3.5   Morphological Transformations

Urban morphology is the study of the form of human settlements and the process of their formation and transformation. Morphological transformations refer to the changes of the urban form that are taking place in traditional areas, how the

emerging building types have changed the image and perception of the traditional neighborhood. It is also used to refer to the changes of street structure, size and functional operations of the built forms. Spatial transformations as used in this study refer to the changes in terms of use of space, layout and change of land use. City form is closely linked to configuration and morphology. Any city's form is based on the natural constraints of climate and topography (Kyalo, 2012). The structure of a city can be understood as the location of different actions and relationships of space in the urban environment. It is basically the arrangement of land use in urban areas and the degree of connectivity and ease of access.

3.6 Housing Transformation

Dwelling unit transformation is not a new concept. It embraces the variables of alterations, extensions and redevelopment. Transformation or a change of a dwelling is defined as "an alteration or extension involving building activity and using resources and technology in use in the local area" (Tipple, 1991:4). Tipple talks about changing the structural elements in a house. But he has not mentioned about some elements in his study, which can also be considered as transformation. They include repainting, changing the design of window and door frames and changes in the use of spaces. Extensions or additions involve built additions, which adjoins at least one functional element per unit (Tipple, 1991: 20).

Larsson (1999) found that the transition from traditional to modern housing involves a number of aspects related to building materials and techniques, use of space and the layout of a dwelling. Other characteristics are use of space in relation to activities performed in the dwelling such as, household chores in relation to meals and laundry, personal hygiene, informal income in the dwelling, storage, gardening and keeping domestic animals.

3.7 Housing Adjustments Theories

The theory of Housing adjustment explains the reason for why people change or amend their housing. Although the theory is mostly based on industrialized areas, Tipple (1992) finds it helpful in non-industrialized areas as well. He states that in industrialized areas, households have options of whether to move or stay in the dwelling unit and make changes. He defines this approach as a 'move and improve' choice, stating that the decision to make housing adjustments is a two way process: The first is a decision to adjust housing consumption, the second is a choice between moving or improving or a combination of both. The first decision springs from a mismatch between consumption and demand. The second depends on the balance of costs and benefits associated with alternative (Tipple, 2000:23). Increase in the size of a household through additional children or the

reduction of household members where grown up children decide to move out to form their own household, changes the need and demand for space. This trend is illustrated by both Tipple (2000) and Seek (1983) as a growing disparity over time between current levels of housing utilization and choice of occupiers. The word 'housing stress' is used to elucidate the gap between usage, the requirement and preferences, which grows steadily but with growing intensity over time.

3.8   Transformation of Traditional Houses and Settlements

Transformation is a series of events. The transformation can happen in terms pf culture, space, lifestyle, etc. Cultural transformation of traditional dwelling units can happen by the addition of modern utensils, domestic life and new spaces with no reference to the original old one (Himasari 2012:1) The physical order relates to transformation of houses that are caused by different uses of household vessels and furniture, and the division of a room. There are three levels of transformation; first level, second level, third level with respect to Household utensils, Furniture, Partitioning, Building component and access. Transformation of a space can be studied by understanding the Enclosure System, Spatial Form, Utility, Built Area, Economic Activities of a settlement. (Himasari 2012: 1) Tradition of building houses is affected by the process of modernization, in which universal worth in the living environment has been replacing the local way of living. Previous socially determined framework in using space in a traditional house has been changed into individually preferences in controlling activities and functional needs of inhabitants. According to Himasari, each house has its own way of respecting the original traditional house and developing its structure. What was customary and normal understanding about dwelling is no longer taken for decided.

Tourism is another factor that induces transformation. Tourism has transformed the manner of living where cash-oriented value system has replaced the traditional basis of personal relations and services. The traditional pattern of personal favour and rights between landowners and laborers, and of ritual duties and kinship are disappearing or being seriously modified or changed (Himasari 2012). The interaction between people and their place is fundamental and important to the understanding of transformation, since patterns of change in built form might reveal the structure of control accomplished in the society.

The process of transformation of settlement can be in a positive mode, thereby enhancing the structure and economy of the area. There are two advantages arising out of physical transformations; firstly, new enterprises create new job opportunities and alleviate employment issues to some extent; secondly, the transformation of older dwellings gives space for income generation for many low-income houses as a survival strategy. (Al-Naim and Mahmud, 2007)

The major transformations can get started in three exclusive forms namely, along the streets on the ground floors; in the domestic spaces and demolition of the old fabric and reconstruction of the shopping malls (Al-Naim and Mahmud, 2007).

The transformation of the traditional dwellings is prone to not one single factor but a many factors, where economy plays the main role and acts as the root for all the changes. There are three different types of transformations in the traditional dwellings namely distinct, linear and crucial (according to their physical form) for varieties of commercial enterprises. Transformations of traditional buildings are dependent on the social structure of the family; the diversity of employment; the maintenance of traditional dwellings; the coming up of developers and their attractive housing unit compounds with all modern facilities. Also, the transformation can be observed in 4 categories, namely Adjustment, Addition, Conversion, and Reconstruction (Al-Naim, Mahmud, 2007). One can say that the process of transformation, like any living organism, grows and over time is changing and ongoing but it should be also borne to mind that one should not forget the past, traditional values and culture that is the root of identity with its growth (Al-Naim and Mahmud, 2007).

Transformation of household production, livelihoods and practices has brought inevitable change to the traditional houses of the communities. Houses undergo change to accommodate new activities while some old activities linked to pre-modern life in rural areas may no longer be salient. Change is also induced with new technologies i.e. electricity, new household appliances and telephones. Modern media can bring new patterns of behavior, especially among the young, with new idea of privacy and personal autonomy, as well as new potential for tensions between different generations. Chuaprama and Ornsiri (2012) and Chuaprama, and Panin (2012) has used Environment, Livelihood, Social aspect as the parameters for studying the transformation. The authors have pointed out that the settlements in Songkhla basin are undergoing changes due to modernization and are losing their old community structures. The culturally unique values, on which the settlement was formed is fading due to the emergence of new houses, hybrid economy and society. The relationships between community ecosystems and ways of life of the communities in the context of modern development are manifested in the changing physical features of the communities and how they are shown into their vernacular houses (Al-Naim and Mahmud, 2007). Hence, the transformation of any traditional area has to be controlled. The transformation has to be managed through incorporation of historic urban elements within the existing fabric by framing policies. A substantial buffer, special planning zone, construction restrictions, and traffic restrictions, restoration and adaptive use and civic management; reduce the possibility of physical deterioration and ensure proper access and visual exposure. Giving importance on formulating Policy and

plans to focus on the adaptive reuse of monuments and thus safeguard historical patrimony and ensure social and economic viability (Mohammad Sazzad Hossain, 2013).

The study is conducted by including a re-evaluation of literature related to it and the field survey. Historical research method is adopted partially to establish the timeline and legacy of physical growth patterns. The basic objective of the study was to understand the trends and pattern of transformation of Kuttichira, a traditional area. The study involves two approaches; Literature review, quantitative and qualitative data analysis. Quantitative data involve architectural survey and numerical data analysis, such as land use data and infrastructure at a small scale. Qualitative data Involve analysis of data obtained through interviews, narrative enquiry and historical evaluation.

In the process of data collection, the Kuttichira settlement was divided into 3 parts based on heritage value of tharavadus. Samples were collected from all the three parts based on random sampling. In attempting to understand the spatial organization of the traditional houses and the transformation through time, an analysis of basic spatial formation and reasons for change was accomplished. For this means, questionnaires, in depth interviews and personal observations were done. The sampling techniques used for the study are purposive sampling and random sampling. The sample size for the study was 10%, 430 Households. The surveyed data is analyzed on certain transformation indicators, namely; socio-economy, planning and design and lifestyle. This was followed by identification of issues and framing a development strategy for limiting transformations occurring within the traditional area.

4. SETTLEMENT LEVEL TRANSFORMATION IN KUTTICHIRA

There has been a drastic change in the built form density of Kuttichira from 1980 to 2015. A noticeable observation from the grain study (Fig. 2) is that the residential grains are larger than the commercial grains. This is due to the joint family concept of social life which was very prominent during the Arab era and it started declining in later stages developing smaller grains. The density of housing in Kuttichira has increased over time. Previous Open spaces are now transformed into built form for Residential purposes. Another issue is with the Subdivision of plots in Kuttichira settlement occurring to increase residential density and also to accommodate the commercialization in the area.

Considering the earlier scenario, the people involved in Business and private jobs were majorly employed in the wholesale market located above the settlement. Also, the relation between the Arabs and the people residing in Kuttichira had encouraged a few numbers of people to work in the Middle East countries. But, this scenario has changed over time from 1980s to the present context. There has been
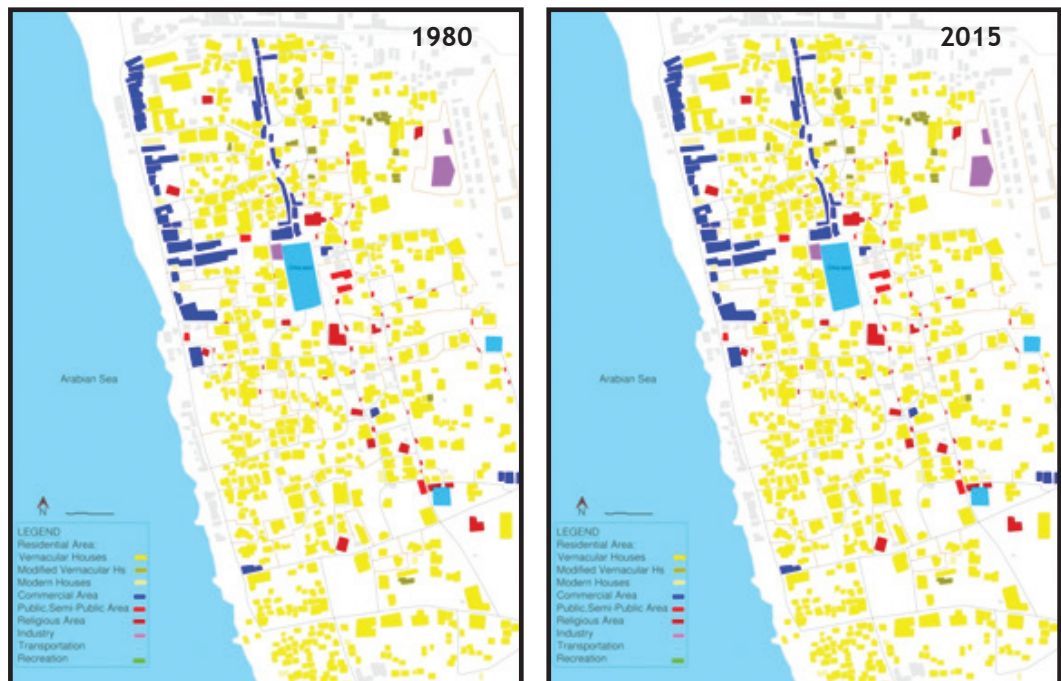
an increase in the out migration of male population to the Middle East countries for jobs. This is because, Kuttichira was meant for the workers of the port town

Fig. 2: Built form change of Kuttichira

Source: Author 2015

Fig. 3: Land Use Transformation of Kuttichira

Source: Author 2015

then. But after the decline of the port, those who worked as merchants shifted to business in Valiyangadi market as the port could no longer support the people, but due to the trade relations with Arabs, most of them started working in gulf. This Migration of working population to Gulf countries has impacted the economy and society of Kuttichira in general. It is hypothesized in the public consciousness that the Mappila Muslims in this area have shown a higher development in this particular phase, with big two storey houses with luxurious facilities and most expensive vehicles as well as the other symbols of luxuries.

Considering land use transformation from 1980 to 2015 (Fig. 3), many old houses are demolished and reconstructed by plot division. New buildings are replacing the old ones. Also, Commercial areas have increased, but at a gradual rate giving a pressure to the existing traditional stock in the settlement. This change in land use can be affirmed due to the location of Kuttichira and for being within the municipality area.

The reason for the small increase in commercial space is due to the presence of the wholesale market to the north of settlement that negates the need for high commercialization within the settlement. Socio-cultural dynamics in the area has resulted in the formation of a spontaneous increase in number of modern residences. This transformation is the effect of the migration occurred and is felt in every aspect of the economy and the society in the State. In other words, the paradoxical development in the state has a correlation with the remittance from Non - Residential Keralite.

## 5.   DWELLING UNIT TRANSFORMATION

The tharavadus in the settlement follow a very unique architectural style (Fig. 4). These tharavadus follow a blend of Nair and Arab architectural style. Nair style design is the local architecture available; as timber craftsmanship and Arab style architecture is induced in the form of use of living spaces.

Fig. 4   Unique Architecture Style of Tharavadu

The traditional tharavadus in the area has undergone much transformation spatially in the form of addition process and division process. The major reason behind the transformation is the

Fig. 5: Division Process in Tharavadu and the Traditional Tharavadu
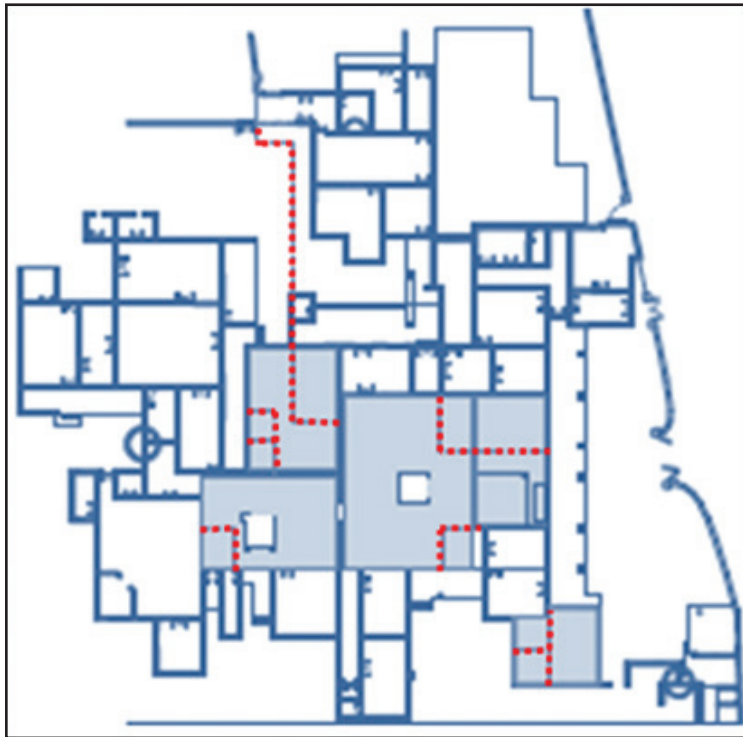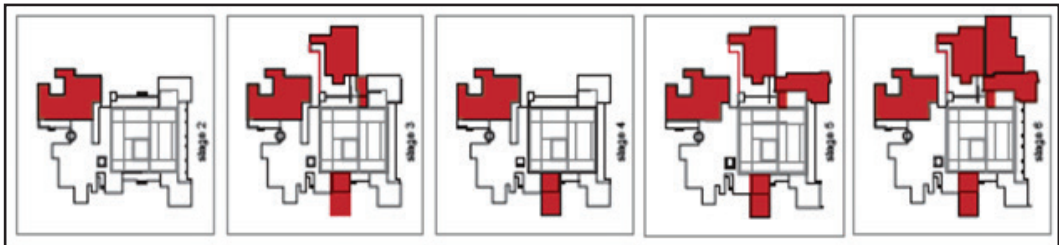

Source: Fathima Hameed. B (2005:107)

demand to incorporate the growing members in the family. The Addition process in the tharavadus has taken place in the shape of individual apartments getting attached to the old block. All the growths occurred are self-contained family apartments of the house (Fig. 5).

The transformation (Fig. 6 and 7) is also affected by the socioeconomic changes that have occurred within the tharavadus. Another important aspect is the tendency of the residents to move out from the joint family concept to a nuclear household or the desire to own a modern house.

6. STRATEGIES FOR CONSERVATION

The dynamics of changing economic activities, changes

Fig. 7: Addition in Tharavadu

Source: Fathima Hameed. B (2005:107)

Fig. 6: Transformation of Tharavadus Observed in Kuttichira

Source: Author 2015

in land use pattern and the growing density of built form in new settlements have transformed the city structure. A conservation strategy for the traditional settlement supported by urban regeneration may be considered as a planning tool to incorporate the changes occurring and the old fabric to maintain the historic significance and the settlements identity. Furthermore, establishing guidelines on the interventions is very important to meet the principles of historic value and adopt those that change according to the economic and social realities within which the buildings are to be used. The strategies to conserve and regenerate the Kuttichira settlement may be as follows:

6.1   Policy Decisions

An urban renewal program is needed in order to restore the Kuttichira precinct and to provide liveable condition for the people residing in the old tharavadus. A committee consisting of administrative and technical experts has to be formed for development activities occurring in the area and the same committee should be involved in conserving the architectural and socio-cultural character of the settlement. The area is not delineated as heritage area by any authorities. So, this area has to be considered as a heritage zone in the master plan of the city.

6.2   Community Based Organizations

Heritage conservation is difficult to be carried out without public support. Therefore, they have put in efforts to stimulate public awareness in heritage conservation. Community Based Organizations (CBOs) have proved to be active social actors. CBOs have the potential to execute many initiatives. They play an active role in enforcing land development control tasks so as to minimize or reduce problems associated with transformation processes being undertaken by tharavadus owners. They help in advising and training housing developers to acquire the best methods and skills for carrying out transformation and improvement of their houses. CBO's also are involved in Improving community facilities and services and they mobilize financial and technical resources from within and outside the settlement. These abilities of CBO's can be used for effective promotion of awareness among people.

6.3   Land Use

A detailed development plan has to be prepared for the core city with street as the basic unit. Also, indiscriminate land uses in the settlement should be identified and has to be shifted away from the area to ensure a hygienic, pollution free environment. Also, the space available after shifting the above said activities should be utilized for Residential uses and parks. The important landmarks of the settlement namely; Chira tank, Idiyangara pond and park in the settlement should be developed.

6.4 Legislative Measures to Exert Control over the Future Developments of the Area

For the effective implementation and management of the conservation programme and according to the problems and issues derived from the studies, recommendation given include Incorporating Kuttichira area into the new master plan in such a way that it makes an appropriate framework for the management and implementation of the area. Framing zoning regulations, guidelines, bye laws for controlling the new developments as well as controlling the non-conforming additions and alterations to the historic fabric of the Kuttichira tharavadus. Other recommendations can include giving Suggestions to improve the spatial and environmental quality of the settlement, the improvement and up gradation of infrastructure services which include sewer lines, drainage system and Revitalization of the community spaces, which are under utilized or misused.

6.5 Demarcation of the Heritage Zone

Demarcation of the heritage zone in the master plan for taking a holistic approach for the protection of the natural, 'built and cultural resources' of the whole area which consists of the a variety of components like the misqal mosque, Chira tank, Kuttichira tharavadus and the traditional community, etc. It is essential to delineate the entire area derived from the studies as a heritage zone. This will ensure appropriate measures for the protection of the heritage. There are buildings, open spaces and natural features inside and outside Kuttichira which has its own importance as a part of the heritage of the city. The area of Kuttichira has different characteristics within itself. Hence, zoning is necessary for differentiating the distinct characteristics within the area. Hence, the entire Kuttichira area is divided into 3 zones (Fig. 8).
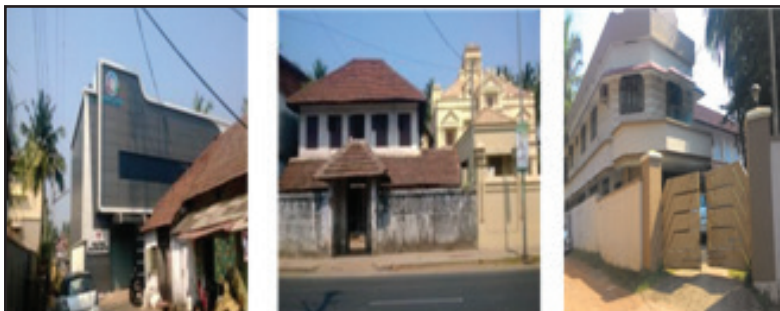
Fig. 8: Conservation Zoning of Kuttichira

Source: Author 2015

- **Zone A:** Comprises of traditional residential buildings- THARAVADU which are of high heritage value which is unique for the timber craftmanship and the evolution of typology with mixed architecture. The Misqal mosque, chira tank and the Juma Masjid fall under this zone.

- **Zone B:** Comprises of traditional Kerala house, most of which are presently being used as go downs. Most buildings in the zone are two storied with tiled sloping roofs. This area also includes modern houses.
- **Zone C:** Comprises the commercial street. The buildings are mostly two storied with tiled sloping roofs. Most of them also have extended sheet roofing.

Fig. 9: Development not to be allowed

Source: Author 2015

Fig. 10: Urban Revitalization

Source: Author 2015

The conservation zones for Kuttichira should be divided to establish a system of limitations for interventions in the site around the following elements:

- Street pattern and alignments
- Building height and massing
- Land subdivision
- Land use
- Architectural regulations

6.6   Recommendation at Dwelling Unit Level

Giving recommendation at dwelling unit is important to conserve the historic characteristics of tharavadus. Since, alterations in tharavadus cannot be restricted, as people residing within changes it to accommodate their needs. Hence, guidelines should be provided by considering their needs as well as to conserve the tharavadus. New residences and additions added must be carefully sited and planned not to overwhelm or obscure the form and proportions of the traditional structure and to maintain the integrity of the surrounding block's context. Considering, the building of new houses, façade of building should be characterised by circular columns with flat capitals. Building facades shall incorporate architectural design details or features that are acquainted with the heritage character of the area.

Fig. 11: Heritage Walk - Kuttichira
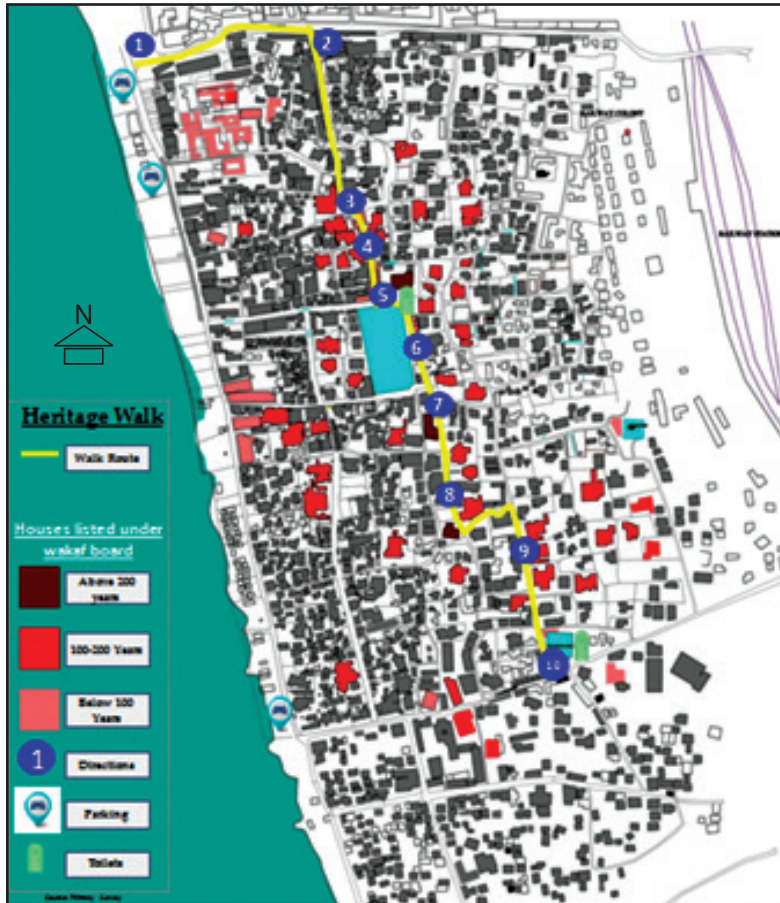
Source: Author 2015

7. RECOMMENDATIONS FOR REGENERATION OF KUTTICHIRA

In Kuttichira, since the area has good cultural heritage. Government should take up the concept of 'Cultural Park' for heritage conservation and regeneration. Under this concept, historical buildings and old streets are integrated with restaurants, souvenir shops and cultural activities into a historic region. The pedestrian pathways need to be repaved, lighting should be improved with landscaping and greening of the cultural park. The unused chira tank has a potential has to be revitalized. A heritage walk (Fig. 11) should be created to make the citizens aware of the importance of the cultural and historical environment. The walk is done by mixing the stories of all the participants in the context of research work, bringing on scientific sources and also on the life experiences of local inhabitants, on the finding of local curiosities and on the accumulated facts of the places concerned. Such a walk can help in taking many forms with the aim of experiencing, documenting and living a territory in curious ways: guided tours run by heritage communities, sensitive walks run by authors and visits to the residents home in their own neighborhoods. Heritage walk is a special walk conceived by and with those who live and work in a territory or have a special affinity with it. The walk is done by mixing the stories of all the participants in the context of research work, bringing on scientific sources and also on the life experiences of local inhabitants, on the finding of local curiosities and on the accumulated facts of the places concerned. The concept of Heritage walk can be bought in Kuttichira. This will help in increasing the revenue, as well as help in creating awareness of the historic importance of Kuttichira.

The tharavadus that are under Wakaf Board can be made museums in ground floor, with first floor used by the residents. This will in one way help the residents

in earning some money which can be used for maintenance of these structures. Also, using them as museums will help in making the people an tourists know the history of one of the influential port town of 12th Century and the culture that was formed due to the amalgamation of Arabs and Nairs.

The stage at present is unused in Kuttichira precinct which can be utilized for cultural performance of the area (Mappila Paattu, Kol Kali, Ummuma Paattu and Oppana) for tourists. Malabar food court should be installed along the heritage walk by women. The introduction of these folklores will help in bringing out the cultural dances and songs that are unique to the Mappila settlement and thus will enhance tourism activity as well.

8. CONCLUSIONS

This study discusses 3 types of transformations in Traditional Settlements i.e. settlement, dwelling unit and socio-economy. The features of the traditional houses, once formed with socio-cultural and religious values, have been drastically reduced as the contexts have changed to accommodate the socio-economic changes due to migration and desires of residents. It is perhaps an important issue to understand the historical as well as the architectural values of these traditional dwellings for which there exist no such guidelines as yet. The transformation will occur but without respect for architectural values. Therefore, conservation of such dwellings is very urgent and essential. Although the transformations have economic benefits and are in the interest of the residents of Kuttichira, it is destroying the traditional heritage as it is not following any building codes. Therefore, it would be relevant for both public and the private sector to take initiative in order to protect and preserve these buildings that can be potentially used for many activities and also can help in bringing economic benefits in a much broader perspective. A regeneration and conservation project is essential where transformations can be tolerated to some degree to satisfy the need of residents and also can save such important structures by introducing different profitable policies. This paper supports regeneration of spaces by favoring some measures and regulations by which we may conserve the valuable architectural features and also provide user requirements so that the residents are comfortable. Therefore, it can be said that the process of transformations grow and over time is changing due to socio-economic changes and personal desires and needs of residents. One should not also forget the past, traditional values and culture that is the root of identity.

REFERENCES

Abdurahiman, K.P. (2004) *Mappila Heritage: A study in their social and cultural life, Doctor of Philosophy, History*, Calicut University.

Al-Naim, M. and Mahmud, S. (2007) Transformation of traditional dwellings and income generation by low-income expatriates: The case of Hofuf, Saudi Arabia, *Cities*, Vol. 24, No. 6, pp.422-433.

Arnold, D. (1982) Islam, the Mappilas and peasant revolt in Malabar, *The Journal of Peasant Studies*, Vol. 9, No. 4, pp.255-265.

Chuapram, S., King, R. and Panin, O. (2012) Transformation of Local Living: Buddhist Thai Communities and Vernacular Houses around Songkhla Lake Basin, *Procedia - Social and Behavioral Sciences*, Vol. 50, pp.42-54.

Cohen, L. and Manion, L (1989) *Research Methods in Education*, Routledge, London.

Fathim Hameed, B. (2008) *An inquiry into the socio-cultural manifestation of the Kuttichira Mappila Muslim houses*, B.Arch. CEPT University, Ahmedabad.

Hanan, H. (2012) Modernization and Cultural Transformation: The Expansion of Traditional Batak Toba House in Huta Siallagan, *Procedia - Social and Behavioral Sciences*, Vol. 50, pp.800-811.

CPWD (2013) *Handbook of Conservation of Heritage Buildings,* 1st ed. [eBook] New Delhi:, CPWD, pp.1-104. Available at: http://cpwd.gov.in/Publication/ConservationHertBuildings.pdf [Accessed 15 May 2016].

Hassan, G. (2012) Regeneration as an approach for the development of informal settlements in Cairo metropolitan, *Alexandria Engineering Journal*, Vol. 51, No. 3, pp.229-239.

Hossain, M. (2013) Strategies to integrate the Mughal settlements in Old Dhaka, *Frontiers of Architectural Research*, Vol. 2, No. 4, pp.420-434.

Kyalo, J.K. (2012) *Study of Transformations of Built Forms in Negara Area*, Nairobi. M. Arch. University of Nairobi.

K.P.A. (2004) *Mappila heritage: A study in their social and cultural life*, Ph.D. University of Calicut.

Kattil, V. (2014) [video] Kuttichira, Calicut: Kairali TV.

Wikipedia. (2016) Kozhikode. [online] Available at: https://en.wikipedia.org/wiki/Kozhikode [Accessed 15 May 2016].

Kozhikode Urban Renewal (2015).

Vaisali, K.K. (2014) *Conservation of Kuttichira*. B.Arch. NIT Calicut.

Karmakerala.com. (2016) Kuttichira. [online] Available at: http://www.karmakerala.com/guide/kuttichira.html [Accessed 15 May 2016].

Menon, A. S. (1979) *Social and cultural History of Kerala*, Sterling publishers, New Delhi.

M.G.S.N. (n.d.) *Calicut the city of truth revisited*, Calicut, pp.1-34.

Nguluma, H. (2008) The role of mafuni in housing construction in informal settlements in Dar es Salaam, *Journal of Building and Land Development*, Vol. 13, No. 2.

Nowak, A. and Tokarczyk, N. (2014) Transformations of traditional land use and settlement patterns of Kosarysche Ridge (Chornohora, Western Ukraine), *Bulletin of Geography. Socio-Economic Series*, Vol. 24, p.24.

Orbasli, A. (2000) *Tourists in Historic Towns*, E & FN Spon, London.

Osmançavusoglu, A. (2006) Urban transformation process: ulus hist. Ms. Urban design, Middle East Technical University.

Parappil, M. (n.d.) *Kozhikkotte Muslimgalude Charithram*, Calicut, p.50.

Robertson, R. (1992) *Globalization*, Sage, London.

Said, S., Aksah, H. and Ismail, E. (2013) Heritage Conservation and Regeneration of Historic Areas in Malaysia, *Procedia - Social and Behavioral Sciences*, Vol. 105, pp.418-428.

Salama, R. (1998) Understanding Transformation of Public Housing in Egypt, *Open House International*, Vol. 23, pp. 32-40.

Sebti, M., Alkama, D. and Bouchair, A. (2013) Assessment of the effect of modern transformation on the traditional settlement 'Ksar' of Ouargla in southern Algeria, *Frontiers of Architectural Research*, Vol. 2, No. 3, pp.322-337.

Shaw, G. (1995) Building a new heritage - tourism, culture and identity in the New Europe, *Tourism Management*, Vol. 16, No. 5, pp.399.

Sivavalsan, K. (2012) *Valiyangadi - The Historic Market Street in Kuttichira, Kozhikode: A study of the main market street, the settlement and how it attained its unique Urban Character*, M. Urban Design, CEPT University, Ahmedabad.

Panin, O. (2008) *Thai-Tai vernacular house*, The Thailand Research Fund, Bangkok.

Seek, N. (1983) Adjusting Housing Consumption: Improve or Move, *Urban Studies*, Vol. 20, p.455-469.

Rapaport, A. (1969) *House form and culture*, Prentice-Hall, Englewood Cliffs, N.J.

Rapaport, A. (1994) *Spatial organization and the built environment, Companion Encyclopedia of Anthropology*, Routledge, London. 460-502.

Thiberg, S. (1975) Människa-Närmiljö-Samhälle, Introduktion till byggnadsfunktionslära (Swedish), New edition, 1982, KTH, BFL Al, Stockholm, The Swedish Council for Building Research.

THE HINDU, (2014) Facelift for Kuttichira pond and Mishkal mosque.

THE HINDU, (2015) Areas to be made heritage zones.

Tipple, A. (1992) Self-help Transformations to Low-cost Housing: Initial Impressions of Cause, Context and Value. Third World Planning Review, 14(2), pp.167.

Tipple, G. (2000) Extending themselves: user-initiated transformations of government-built housing in developing countries, *Cities*, 19(1), pp.81-82.

Vicente, R., Ferreira, T. and Mendes da Silva, J. (2015) Supporting urban regeneration and building refurbishment. Strategies for building appraisal and inspection of old building stock in city centres, *Journal of Cultural Heritage*, Vol. 16, No. 1, pp.1-14.

Wu, M. and Chang, T. (2012) Designing and implementing a macro-approaches-based curriculum for heritage language learners, *Innovation in Language Learning and Teaching*, 6(2), pp.145-155.

Yasin Chauhan, A. and Wai Ki, P. (2016) *Heritage Conservation a tool for Sustainable Urban Regeneration: A Case study of Kaohsiung and Tainan, Taiwan*. 41st ISoCaRP Congress, p.16.

Experiences from Informal Settlements:
A Case of Banganga, Bhopal

Dinesh Singh

Abstract

Urbanization is an index of transformation from traditional rural economies to modern industrial one. According to UN-HABITAT by 2050, 66 per cent of the world's population will live in cities that is 7 out of every 10 people will live in an urban area. Rapid urbanization and inadequate capability to cope with the housing needs of people in urban areas have contributed too many socio-economic and environmental issues, which amongst others have subsequently resulted in land use changes and have led to the formation of informal settlements in urban areas. Banganga, one of the dense informal settlements in the western part of Bhopal city with close proximity to the market area called New Market as a central business district. Due to its unique social, cultural and self-sustaining features, it is important to study the settlement. The present study highlights the experience in terms of social, cultural, living conditions, and livelihood activities in this informal settlement.

1.   INTRODUCTION

Urbanization is an index of transformation from traditional rural economies to modern industrial one. According to UN-2014 World Urbanization Prospects report, over half of the world's population (54 percent) lives in urban areas. The coming decades will bring further profound changes to the size and spatial distribution of the global population. By 2050, 66 per cent of the world's population will live in cities that mean 7 out of every 10 people will live in an urban area. Most urbanization will occur in the developing countries of Africa and Asia, with India and China accounting for one-third of all urban population growth. Mega-cities or urban centers are changing into centers of high population density, infrastructure, investments, economic growth opportunities, networking, information, and connectivity.

In most metropolitan cities, the urban population increases very rapidly because of socio-economic activities within the urban area, rural-urban migration for better job opportunities, education, transportation, housing, access to the basic needs and better quality of life. As migration increases the limits of the city also exceeds. Thus, large concentrations of people are living in the small chunk of land which further converted into informal settlements. These settlements are prevalent in almost all urban areas of the world. Its forms and types vary from country to country. According to the UN-HABITAT, 33 per cent of the world's urban population in developing world lives in informal settlements and it is estimated

Dinesh Singh, *Doctoral Research Scholar, Department of Architecture and Planning, Indian Institute of Technology Roorkee, Uttarakhand, India, Email Id: dineshsinghiitr@gmail.com*

to be one billion, will probably double by 2025 and triple in the following two decades (Inclusive Cities, 2015). Majority of these informal settlements or slums form and grow mostly in developing countries of Africa and Asia where besides getting better job opportunity and income for people, urban areas are means for improving the better quality of living and environment conditions (Srinivas, 2015). In India as per census 2011, 17.4 per cent of the urban population resides in informal settlements or slums. A total 13.9 million households were estimated to be present in 2613 informal settlements or slums in urban areas spread across 29 States and Union Territories in the 2011 Census of India (Slums in India, 2015). Various benefited scheme for the welfare of informal settlements or slums is implemented such as JNNURM, RAY, BSUP, etc.

2. CHARACTERISTICS OF INFORMAL SETTLEMENTS

Rapid urbanization and inadequate capability to cope with the housing needs of people in urban areas have contributed too many socio-economic and environmental issues, which amongst others have subsequently resulted in land use changes and have led to the formation of informal settlements in urban areas. Due to these changes rapid growth of informal settlements constitutes one of the most peculiar forms of urbanization. Although urbanization is associated with development and poverty reduction, rapid urbanization also presents a number of challenges e.g. rapid rural-to-urban migration, high unemployment, poverty, informal economy, poor planning and natural disasters (Stevens, 2014). As per UN-HABITAT, informal settlements are defined as: Areas where groups of housing units have been constructed on land that the occupants have no legal claim to, or occupy illegally; unplanned settlements and areas are where housing is not in compliance with current planning and building regulations (unauthorized housing).

These settlements emerge because the formal housing market has been unable to cope with the rate of increase of population and especially immigration to urban areas. Figure 1, shows development stages of informal settlement from vacant land to the formation of a densely populated area. They are considered as a residential area in an urban locality inhabited by the very poor who have no

Fig. 1: Development Stages of Informal Settlements

Vacant land — 1- building — Building of different sizes — More building — nth building
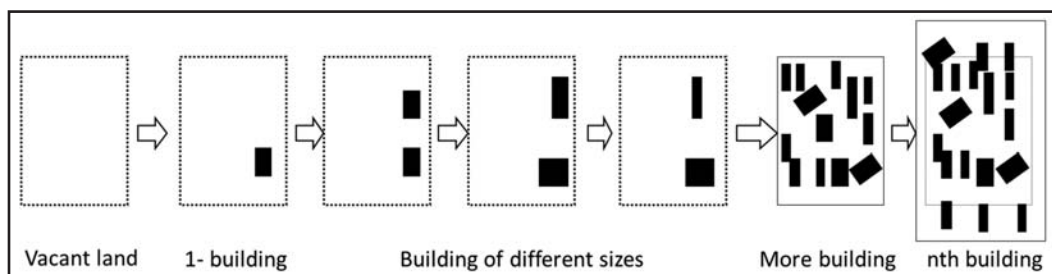
Source: Author

access to the endured land of their own, and hence "informal" on vacant land, either private or public.

They provide shelter for densely populated urban population which lack basic property rights and characterized by inadequate infrastructure, poor access to basic services, unsuitable environments, uncontrolled and unhealthy population densities, inadequate dwellings, poor access to health, education facilities, overcrowding can contribute to stress, violence and increased problems of drugs and other social problems (Informal Settlements, n.d.). These settlements include:

• squatter settlements on public or private land;

• settlements for refugees and vulnerable people;

• upgraded squatter settlements;

• illegal suburban land subdivisions on private or public land, often on the urban fringe; and

• overcrowded, dilapidated housing without adequate facilities, in city centers or densely urbanized areas.

Informal settlements are known by various local names, e.g., Bustees, Jhuggi-jhompri (India), Barracas (Guatemala), Barriadas (Peru), Barrios (Venezuela), Callampa (Chile), Barrios piratas (Columbia), Favelas (Brazil), Colonias proletarias (Mexico), villas miserias (Argentina), etc. These settlements have a significant percentage of the population of developing cities, yet there is no common planning framework for upgrading these settlements. The management and improvement of informal settlements are most necessary and there is urgent need to develop a real understanding of your informal settlements. Physical, social and legal are essential characteristics to understand the informal settlements (Abbott, John, 2001).

2.1 Physical Characteristics

An informal settlement, due to its inherent "illegal" status, has services and infrastructure below the "adequate" or minimum levels. Such services are both network and social infrastructure, like water supply, sanitation, electricity, roads, and drainage; schools, health centers, market places, etc. Water supply, for example, to individual households may be absent, or a few public or community standpipes may have been provided, using either the city networks or a hand pump itself.

2.2 Social Characteristics

Mostly household in the informal settlement belongs to lower income group, either working as wage labor or in various informal sector enterprises. On an average, most earn wages at or near the minimum wage level. But household income levels can also be high due to many income earners and low paying jobs. They are predominantly migrants, either rural-urban or urban-urban. But many are also second or third generation squatters.

2.3   Legal Characteristics

The key characteristic that delineates an informal settlement is lack of ownership of the land parcel on which they have built their house. These could be vacant government or public land, or marginal land parcels like railway setbacks or "undesirable" marshy land. In many parts of Asia, a landowner may "rent" out his land for a nominal fee to a family or families, with an informal arrangement, which is not however valid under the law. In general, there are several attributes that act as generative forces and determine the quality and size of a settlement (Srinivas, 2015).

In Indian condition, Census of India defines informal settlement or slums as "a compact settlement of at least twenty households with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions" (NSSO, 2013). The objective of the study is to experience the living condition, social culture, activity livelihood activities of informal settlement and make out the inferences from the most inherent part of the society. In general, spatial data on informal settlements are generalized, outdated, or even nonexistent. To capture the complex settlement pattern and at the same time capture the social objects typical for informal settlement. From it, the physical features are used to analyze structural homogeneity and heterogeneities within and across informal settlements. Similarly, for understanding the social fabric the ethnic groups, community spaces, livelihood spaces and religious buildings are studied. In order to achieve inclusiveness and strengthen the role of community understanding of social fabric is must and its integration with built environment will give an inside if the prevailing situation and aspiration of society.

3.   THE CITY OF BHOPAL

Bhopal, the state capital and infamous for the greatest ever industrial accident, is being classified on the basis of chronological evolution the city in four distinct districts. The old city is the walled city, the new Bhopal, the administrative town; South T.T. Nagar, the Industrial township of BHEL and refugee's township at Bairagarh. These four districts are distinct in a certain manner, the old city is typical

Map: 1 Banganga Location
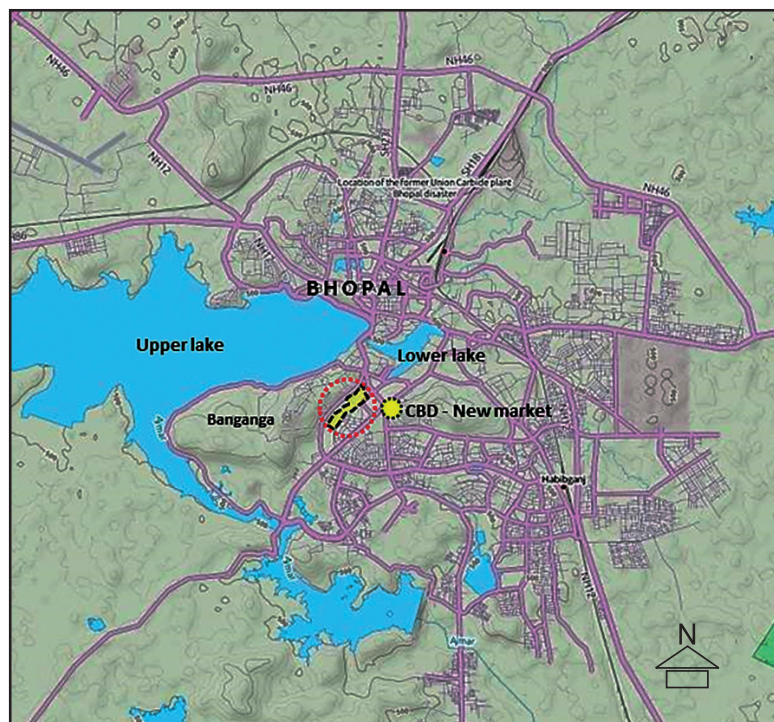
gridiron pattern and the focus being the Jama Mosque, the density is high, building heights varying from two-four storied buildings, typical mixed land use like any other Indian city i.e. shops and commercial establishments on lower floors and residences on upper ones.

However, the influence of community and occupation is very much visible in the spatial pattern. The streets distinctly house garment shops, jewelry shops, hardware shops and even *chatori gali* (street of eateries) for mouth watering street food. Similarly, the neighborhoods are based on ethnicity. The seven gates of the walled city are now part of history. After Independence, the city grew beyond the limits and informal settlements mushroomed on the periphery of the old walled city.

Bhopal was declared as the state capital after Independence and need of new administrative town was felt which resulted in the new Bhopal. Most of the hillocks were occupied by government buildings and townships and the unoccupied foothills were covered by informal settlement or slums. Parallel to this development an Industrial township of BHEL also developed. Both these new townships were low density, well-knit transportation network with the legible pattern. Large open spaces as playgrounds and parks were provided, further, the undulating topography kept the density low. Irrespective of comparatively new development the Bairagarh the fourth district remains high density probably because one of the edges of upper lake restricted the sprawl of this township developed for refugees. Irrespective of heterogeneity of four districts one phenomenon was common to all and that was an occurrence of slums which was inevitable in all parts of the city. Though the city has the capacity to take care of the population growth, the mismatch between planned and developed land led to the formation of informal pockets almost in every part of the city. These informal settlements or slums exist at two different levels first as a settlement it contributes to the character of region and impact on the settlement, secondly the inhabitants living in the settlement adds to the existence of the slum. The former is reflected in the physical form of informal settlement or slum and the later in the population living in (Singh, Singh, and Dhote, 2014).

In Bhopal, around 35 per cent of the population lived in 366 informal settlements or slums. Figure 2, shows the location of informal settlements in Bhopal city. The city lies in the hilly terrain slopes and hillocks. Due to the uneven terrain features of the city, the vacant land is prone to accommodate a large chunk of peoples. These informal settlements are located upon vacant or under utilized chunks of land, either private or government; or close to *nallah* or water bodies either they placed upon steep slopes or rock outcrops or in the catchment of water bodies. People occupied these areas and start living. These areas are not suitable for habitation but due to proximity, people start living in such a pathetic condition.

Fig. 2: Informal Settlements / Slums, Bhopal City
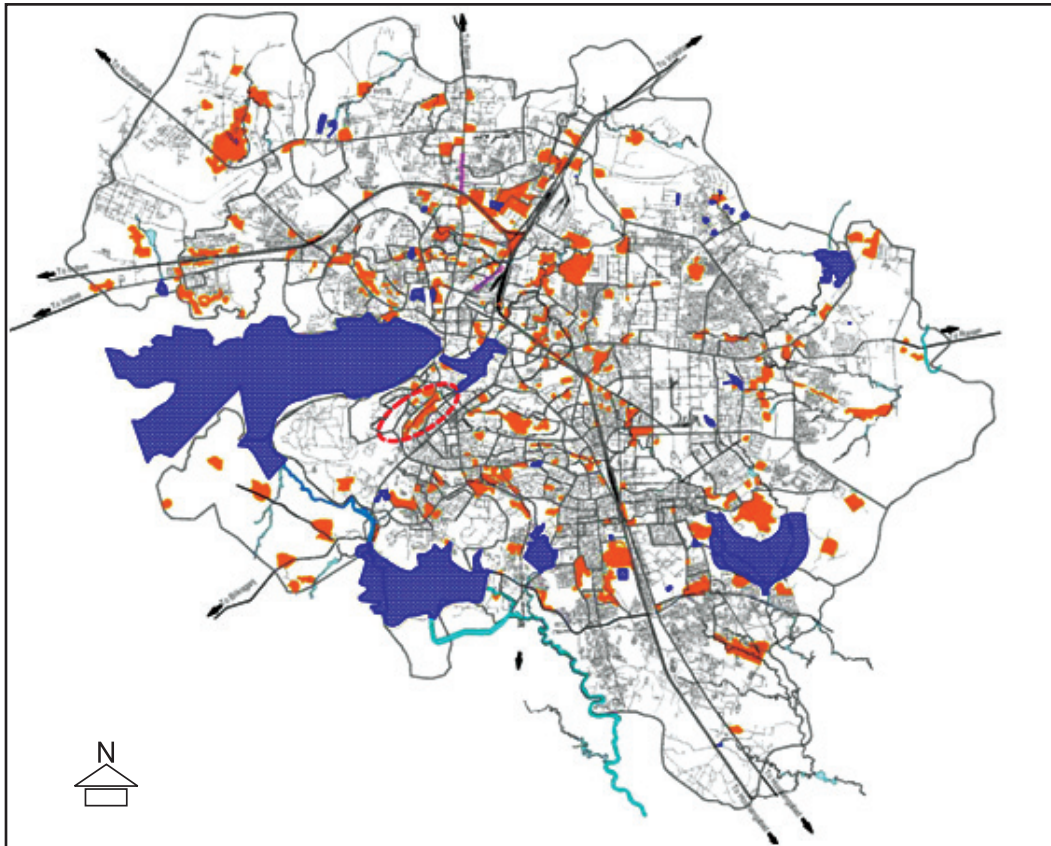
The informal settlements (or slums) are initially located on the outskirts of the walled city but acquired central position due to the expansion of the city and are now in the heart of the city. The dwellers of such settlements contribute to the city as the service sector. Similarly, the informal settlements of new Bhopal houses are mostly of government employees and many of them are engaged in the informal sector and others work as domestic help in the nearby community. These informal settlements are on government and private land. In spite, the fact that the new city is planned one, doesn't have a place for slaughter house, butchery shops, repairing and scrap shops. These shops are accommodated in slums; also the livelihood of the slum dwellers is supported by cottage industry, seasonal works and as unskilled laborers. The genesis of these informal settlements or slums reveals that slums occupy government, public or private lands, the land value of such land vary from place to place, the land use is may be incompatible and development may not be with respect to topography. The redevelopment of informal settlements or slums can release high-value land, where more suitable land use can be allocated and the risks can be reduced. However, it is not possible to intervene in rehabilitation unless and until the inhabitants are willing. The recent slum policies in India aim at slum-free cities,

as a result, many rehabilitation and resettlement are being initiated, and the present study presents the relationship of social issues with the physical fabric.

4.   BANGANGA, BHOPAL

The objective of the study is to understand the informal settlement and then on the basis of experience gained find out inferences from that. This study focuses on location, landform, land ownership, physical conditions and social groups, and is carried out in the most prime location as it is located in the administrative area of Bhopal city. This area has a high land price and potential for urban development. Moreover, the people of the study area served the surrounding neighborhood and city in many ways, most of them are domestic helpers and work in the small retail store as a helper. i.e. slaughter house, welding shop, potters, bamboo shop, repairing shop, cottage industry, chicken shop, photo frame, music band shops, etc. This study area will help to understand the characteristics of informal settlements.

Banganga slum is located in western part of Bhopal city on a steep and rocky ridge, with a big drain flowing across it. It lies between the Shyamla Hills and T.T. Nagar region. After the Bhopal gas tragedy in 1984, it came into existence. Due to this tragedy, there is a sudden influx of people coming and settling here and in some part of it, which is called as Pratap Nagar, Shakti Nagar, and Hasnat Nagar. These three areas originated earlier than the settlement group due to increasing in urbanization up to 80.1 per cent in Bhopal after coming up of BHEL, and industrialization. Hasnat Nagar is another part of these informal settlements or slum with mainly Muslim communities. The origin of the name "Banganga" comes from a small natural water source which can be still seen near the Jharneshwar Mandir.

Fig. 3:   Settlement Pattern and Layout Plan of Banganga
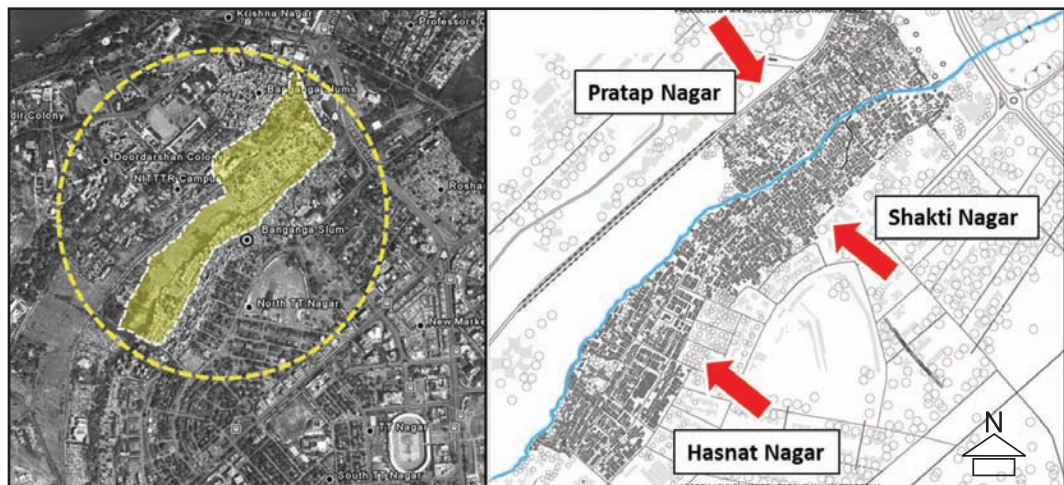
Source: Author

Fig. 4: Banganga Settlement Pattern

working spaces   living spaces   temporary constructions   community spaces
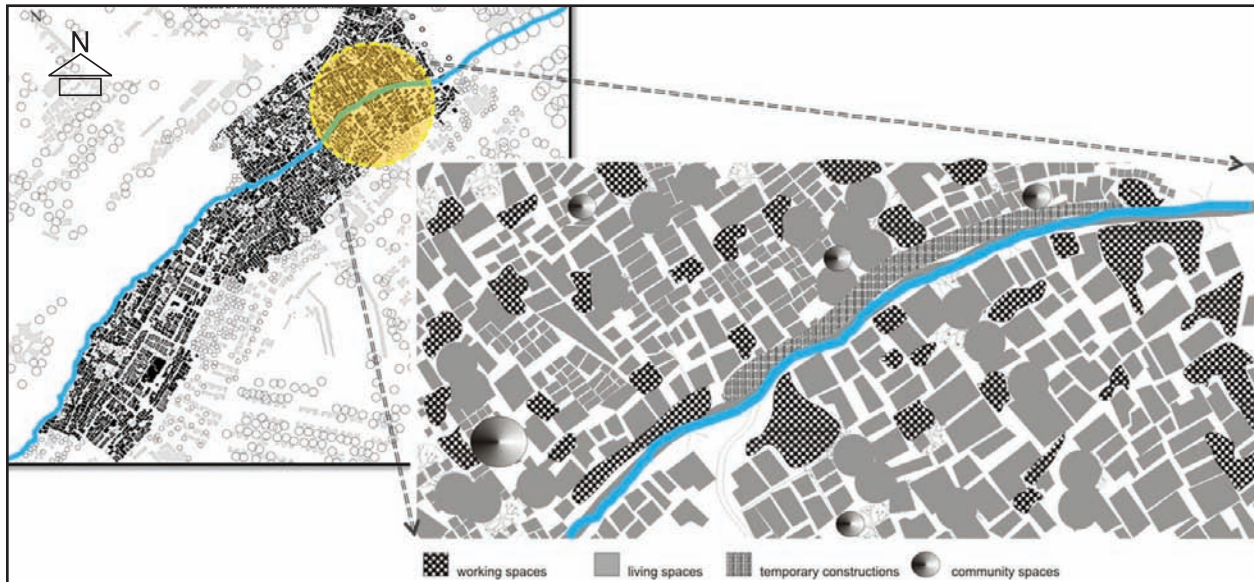
Source: (Singh. Dinesh, Singh.Preeti,Dhote. Krishna, 2014)

Banganga is in close proximity to government buildings on one end and the CBD – New Market of Bhopal on another end. It is on a sloppy side which is not suitable for construction, but due to its prime location people have started living there even the condition is not suitable for living. It acts as a major support system for existing CBD as it houses activities like repairing shops, poultry, auto drivers and also most of the educational and coaching institutes.

Fig. 4, shows the settlement pattern of Banganga which is organic with no specific geometric pattern. However, near the *nallah*, various communities, working, living with temporary construction are interlinked with each other. The community spaces available in such a dense area are always advantageous, which is usually not seen in the similar pattern of settlement. House layouts are unplanned, room dimensions are insufficient and undefined spaces with open space 10 per cent only. The land use as per master plan is in the environmental sensitive zone but presently it has 70 per cent residential land use, 20 per cent commercial on-street shops and 10 per cent community spaces.

In Fig. 5, shows the structure type and building height in Banganga. Most of dwellings units are in fair condition, majority of them are semi-pucca and *kutcha*. Dwelling units near the *nallah* are mostly semi-pucca; few of them are *kutcha* houses also. In south-west direction, most of the structures are *pucca* because of flat contours. As move towards the *nallah*, the structure pattern changes to pukka, semi pukka to *kutcha* and building height changes to G, G+1 to G+2. People keep repairing their houses at regular interval to keep in proper conditions to live in.

Fig. 5: Structure Types and Building Heights in Banganga
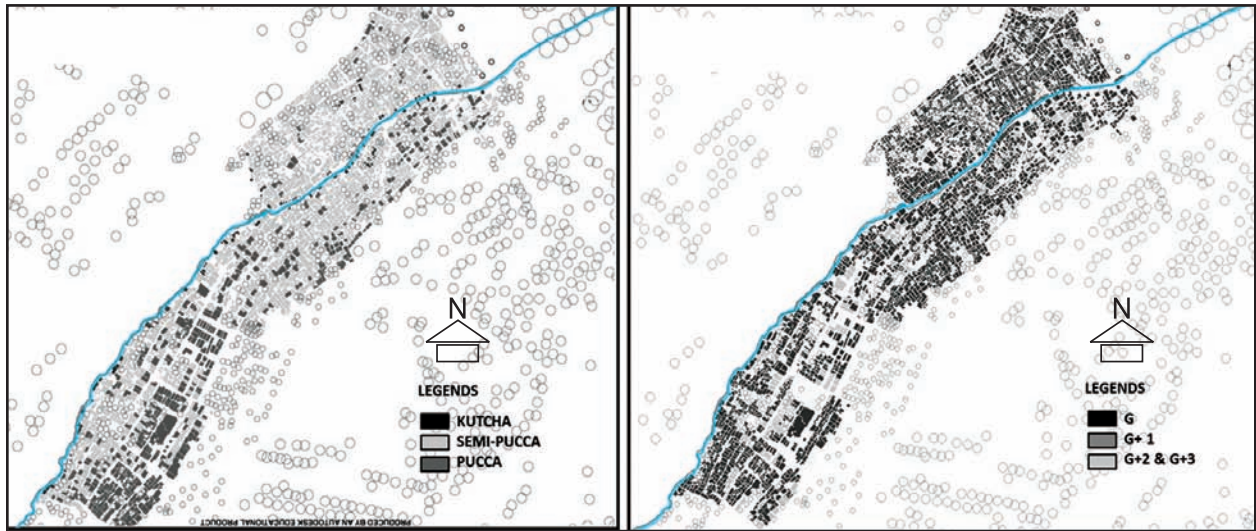
Source: Author

Street pattern is unplanned with no geometry pattern, due to this streets are narrow they generally vary from 0.8 m to 1.5 m wide. Streets are narrow and obstructing profile which creates conjunction. No provision for the movement of vehicles a fire engine and ambulance even in a disaster (Fig. 6), which leads to insecurity during accidents and also waterlogging. There is an inadequate supply of water, besides drinking water lines pass through sewage lines which result in providing contaminated water. In addition there is lack of pure drinking water, insufficient number of common water taps and water availability is also for few hours a day only (Fig. 7) resulting in wastage of time and unwanted quarrels.

Fig. 6: Street Pattern in Banganga

Source: Author

Fig. 7: Inadequate Supply of Water

Source: Author

Fig. 8:   Issues of Concern Like - Leakage of Water, Open Defication Garbage Dump, etc.

Source: Author

Some of the major issues of concern like the leakage of water pipes, open defecation, water stagnation. No provision for solid waste management, people generally throw garbage into the *nallah* or on the street adding to unhygienic conditions (Fig. 8). There is no solid waste management system of collection People generally throw garbage into the *nallah* or on the street adding to unhygienic conditions. Sanitation is the major problem here. No proper provision for common toilets forcing habitants to unhygienic lifestyle. They use rocky outcrop is used for this purpose as it not used for any other purpose. This ruins the environment and contaminates the area. During rains, the people face problems as the houses submerge during the rains. The drains are inadequate to support heavy water flow. Banganga is the catchment area of the lower lake; it was earlier used as irrigation and fulfills the need of people. But now it's degrading due to its use as waste, sewage dumps, and garbage disposal into the *nallah*, which is one of the reasons for choking, overflowing and leading to waterlogging.

Table 1 depicts typological dimensions of settlements that were studied and assessed through a comparison of:

- Occupancy Dimension – Tenure, mode of occupation, extensions, etc;
- Cultural Dimension – Community Characteristics, Work / Occupation Characteristics, etc; and
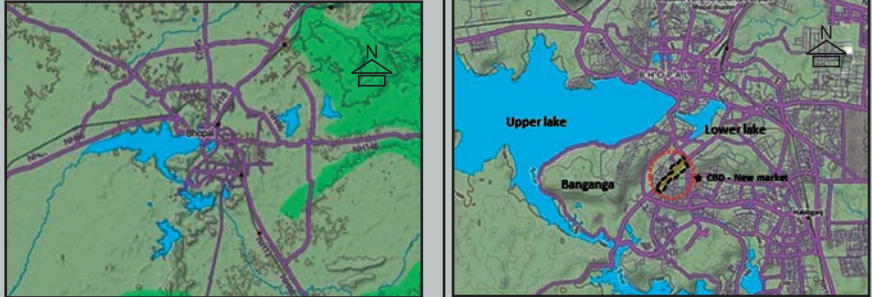- Built-form Dimension – House-form, Street / Open-space form etc.
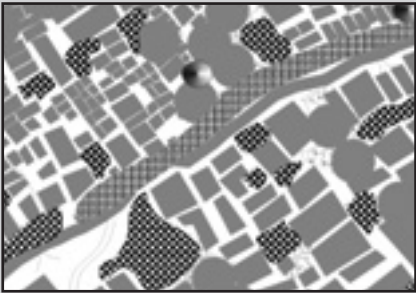
Table 1:   Typological Dimensions
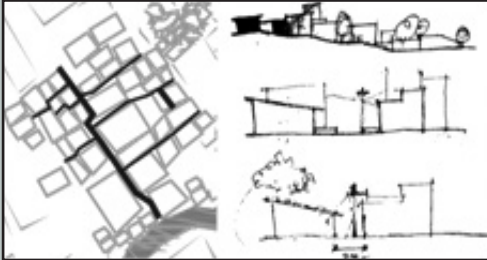
Settlement	Occupancy Dimension	Cultural Dimension	Built Form Dimension
Banganga	Occupants have built their own houses.	Close knit social network and cultural cohesiveness	Unorganized and self-build spaces

6.   COMMUNITY FABRIC IN BANGANGA

In Pratap Nagar and Hasnat Nagar, Muslim and Hindu communities live together. They have strong community links with well knitted social ties which makes them dependent on each other for economic reasons. As such whole area is congested but there is some open space in front of Anganbadi which is used as community space for marriages, functions, etc. Also, places like Budha Mandir, Shiv Mandir, and Community Centre are used for the social purpose. There are also various NGO or Samitiis for different activities such as Suraksha Samiti, Mahila Mandal (Singh, Singh, and Dhote, 2014). While studying the informal settlements of this part of the urban area it was observed that it was organically developed over a period of time and so the texture of the spatial fabric is very coarse with semi built and temporary constructions. The spatial fabric is well knitted with the concept of work and lives as their livelihood spaces and living spaces are integrated. The streets are movement spaces as well as working and playing spaces. The self-employed communities organized heir spaces for their livelihood activities. The making of space is an outcome of the socio-economic product. There is also a relationship between subjectivity and topography as the character of the building space is subjective to the risk of calamities like urban flooding during rainy seasons. The flexibility use of the spaces depicts ways in which slum dwellers transformed the hard rock land to their usable spaces (Mundu, and Bhagat, 2008).

Table 2:   Detail of Banganga Settlement

S.No.	Parameters	Banganga
1	Location	The western part of Bhopal city, on the valley terrain.
2	Age of the settlement	More than 35 years
3	Area of Settlement (Hectares)	42 acres
	Land use	Mixed land use, Settlement is self-Sustainable
4	Estimated No. of Units	3500+
5	Estimated Population (persons)	15000+
6	Density (Persons / Hectare)	887 (approx.)

7	Height	G, G+1, G+2, G+3
8	Structure Types	Kutcha, Pucca, Semi Pukka
9	Settlements	Informal and unplanned
10	Open space	5-10%
11	Ground Coverage	70-80%
12	Land Availability	Unsuitable for construction
13	Pattern	Inorganic and non-geometry
14	Streets	Obstructs profile, no provision for the movement of vehicles and other ser- vices.
15	Water Supply	Community Tap or Water Tanker
16	Sewerage Disposal	Public Toilet & Open Defecation
17	Social	Community space

7.   DISCUSSIONS

Banganga is a self-sustainable settlement with mixed land use pattern. It acts as a major support system for existing CBD by contributing to the city as the service sector. Most of the peoples are low-skilled or unskilled labor or worker and they engage in informal activities and others works. Population density is 887 person per hectare approximately. Because of high population density, 70-80 per cent ground coverage to settle that much of population. Only 5-10 per cent open space available because of informal and unplanned settlement pattern. Different type of housing structures like *Kutcha*, *Pucca*, Semi *Pucca* with varying building heights from G, G+1, G+3, as you move towards the *nallah* the building height varies from G+3, G+1, G to and structure pattern changes to pukka, semi *pukka* to *kutcha*. Settlement pattern is organically developed with no geometry pattern, due to this streets are narrow and they have obstructed profile, with no provision for the movement of vehicles and other services.

Banganga, is a densely populated settlement without basic property rights and characterized by inadequate infrastructure, poor access to basic services, unsuitable environments, and inadequate dwellings, poor access to health, education facilities and other social problems, yet the settlement is self-sustaining. The basic facilities are lacking even though these settlements are an integral part of the society and act as a lifeline for Bhopal city for providing services. If these settlements are not existed then, how a city will survive? For example for routine daily life, every morning when the door-bell rings, the *paperwala* or newspaper vendor throws the bundle of newspapers at our door-step and moves away hurriedly, soon afterward, we get ready and hop on a rickshaw, auto or bus to go to our offices, factories or shop; reaching our workplaces we find the watchman respectfully securing our workplaces and the cleaning personnel doing their jobs. In a typical government office, we meet our personal staff and assistants working with us (Yojana, 2014); at the lunch time, we get the delicious food on time from *dabbawala* (tiffin box delivery man); for the cleaning of clothes, cleaning of houses and cleaning of utensils, we avail the services of maid. There can be such many more examples which can be sited. The common element between all these kinds of domestic helper like *paperwala*, auto-driver or bus driver, a rickshaw puller, watchman, office boys, cleaners, computer operators, *dabbawala*, maid, etc.; is that they all belong to the informal sector and they are coming from the informal settlements. Some other activities which do not exist in any new planned area or settlements are: a slaughter house, welding shop, bamboo shop, butchery shops, poultry, photo frame, music band shops, scrap shops and also most of the educational and coaching institutes as these settlements are located in the core CBD of new market area. All these shops only exist in informal settlements. Roads are damaged, undulated and narrow, which restrict the movement of vehicles. Also,

there is lack of basic property rights, inadequate infrastructure, poor access to basic services (like water supply and sanitation), inadequate dwellings, and poor access to health and education facilities and social security to poor people. No proper space for a workshop for self-employed people. Unplanned building layout, insufficient room dimensions, undefined spaces with no proper ventilation to rooms. One of the major problems at a social level in informal settlements is Illiteracy, it leads to unemployment and in turn poverty and it is the major cause for the formation of informal settlements. Due to unemployment, it gives rise to social evils like crime and addiction. No provision of community spaces which are required for the healthy community life and lack of playgrounds for children. These settlements have strong social harmony as different communities live together. They have strong community links with well knitted social ties which makes them dependent on each other for economic reasons. People have low levels of formal education because of social condition. They are getting low wages also, but they are happy with their living conditions.

8. CONCLUSIONS

This paper has investigated the socio-spatial relationships in an informal settlement. Rapid urbanization is a daunting challenge for cities with large and growing informal settlements. A majority of these people live in the core area of the city because they want to live nearer to their working places and contribute significantly to economic activities in the city. Most of these informal settlements are in unhygienic conditions, in the rainy season these areas are more vulnerable to diseases because most for them are located in low lying areas like Banganga. Problems of an informal settlements in Bhopal are real and needs to be addressed properly and adequately by proper planning interventions. Various issues like land ownership should be solved because most problems will get resolved if security of tenure is provided. Many informal settlements benefited from welfare schemes launched by the central government or state government or local bodies. However, increase in the number of informal settlements is taking place mainly because of lack of implementation of urbanization policy. So there is a need for Urbanization Policy with strong regulation for urban planning and development including slum upgradation for improved quality of life in informal settlements.

REFERENCES

Abbott, J. (2001) *A method-based planning framework for informal settlement upgrading. Habitat International*, 317-333. Retrieved from ttps://www.researchgate.net/publication/248523989_A_method-based_planning_framework_for_informal_settlement_upgrading

Barros, J. and Sobreira, F. (2002) *City of Slums: Self-Organisation Across Scales*, International Conference on Complex Systems (ICCS2002). Nashua, NH, USA.

Bayram, U. and Mehmet, C. (2004) *A Model for Solving Informal Settlement Issues in Developing Countries.*

Hurskainen, P. (2004) *The informal settlements of Voi*. Helsinki: Department of Geography, University of Helsinki, ISBN- 952-10-2077-6.

Inclusive Cities (2015) *Global Learning Program: Upgrading Informal Settlement*, Retrieved 2015, from http://inclusivecities.ning.com: http://inclusivecities.ning.com/page/global-learning-program-upgrading-informal-settlement?xg_source=activity

Informal Settlements (n.d.) *Understanding your Informal Settlements*. Retrieved from www.upgradingsupport.org: http://www.upgradingsupport.org/content/page/part-1-understanding-your-informal-settlements

Ishtiyaq, M. and Kumar, S. (2010) Typology of Informal Settlements and Distribution of Slums in the NCT of Delhi, *Institute of Town Planners, India,* Vol. 7, No. 3, pp. 20-33.

Mundu, G.B. and Bhagat, R.B. (2008) Slum Conditions in Mumbai with Reference to the Access of Civic Amenities, *IIPS Mumbai, ENVIS center, 5*(1).

Naceur, F. (2013) Impact of urban upgrading on perceptions of safety in informal settlements: Case study of Bouakal, Batna. *Frontiers of Architectural Research*, 400-408.

NSSO (2013) *Key Indicators of Urban Slums in India*. Retrieved from www.pib.nic.in: http://pib.nic.in/newsite/erelease.aspx?relid=102108

Pilla, J. (2006) Experiences of learners from informal settlements, *South African Journal of Education, 24*(1), 5-9.

Singh, J.P. (n.d.) *The urban areas are City Planning in India: A Study of Land Use of Bhopal,* Mittal Publication, Delhi.

Singh, D., Singh, P. and Dhote, K. (2014) *Slum Redevelopment by linking social conditions with spatial fabric through Morphological Study, Ontario International Journal on Sustainable Development (OIDA), ISBN-1923-6654*, 38. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2389651

Slums in India (2013) *State of Slums in India- A Statistical Compendium,* Ministry of Housing and Urban Poverty Alleviation, New Delhi.

Srinivas, H. (2015) *Urban Squatters and Slums- Adopting a Rational Approach*. Retrieved from www.gdrc.org: http://www.gdrc.org/uem/squatters/define-squatter.html

Stevens, C. (2014) *Upgrading informal settlements in an urbanizing world,* Retrieved from www.thecityfix.com: http://thecityfix.com/blog/upgrading-informal-settlements-urbanizing-world-slum-inclusive-readjustment-titling-tenure-property-rights-caleb-stevens/

Sufaira, C. (2013) Socio Economic Conditions of Urban Slum Dwellers in Kannur Municipality, *IOSR Journal Of Humanities And Social Science (IOSR-JHSS), 10*(5), 12-24.

Taubenböck, H., and Kraff, N.J. (2013) *The physical face of slums: a structural comparison of slums in Mumbai, India*, based on remotely sensed data.

Update, U. (2010) *Urban Update-Vol12,* Retrieved from www.samarthan.org: http://www.samarthan.org/wpcontent/uploads/2010/11/UrbanUpdate-December2010-Vol-12.pdf

Yojana (2014) *Informal Sector* (Vol. 58), (J. R.K, Ed.) New Delhi. Retrieved from www.yojana.gov.in: http://yojana.gov.in/details_coverstory.asp?CoverId=63

A Glance on Gulbarga City:
Orders within Disorders

Sasmita Rout

Abstract

Gulbarga is an old and historical city, however, many old buildings are being restructured especially along roads approaching Timapuri Circle from the super market. New houses are being constructed in apartment form, which is basically made for renting purposes. Several educational institutions such as Central University of Karnataka or hospitals like ESIC hospital has created scope for outsiders to come to the city in recent years. Despite this Gulbarga still holds characteristics of rural in many ways, which is reflected in its street roads, frequent bullock carts, horse-carts on road, housing structure and interactions people have like in villages. This in turn makes the city more lively and interactive. Although these are rural phenomena, process of change though slow and patchy in Gulbarga is certainly taking place. At a glance Gulbarga looks disordered but there are orders within these unstructured and chaotic spaces.

1. INTRODUCTION

Gulbarga is officially known as Kalaburagi. Gulbarga is a city of regional and state importance in the state of Karnataka in southern India (Fig. 1). The geographical area of Gulbarga city is 64 sq km and houses almost 5.5 lakh population (Census, 2011). Gulbarga is four hours journey from Hyderabad city and almost twelve hours from the state capital Bangalore. It is a chronically drought prone area. For water, the city depends on the portable piped water that comes from Keri Bhosga reservoir (Fig. 2), river Bhima and Bennithora located 25 kilometer away. In spite of the piped water supply that comes a maximum for two hours per day, it is a fact that almost all the houses are using bore wells. It is not clear, whether the residents have taken the permission from the planning authority and Ground Water Board, as the guidelines of Central Ground Water Board provide that the distance between two bore wells has to be 250 meters which needs to be maintained. Unauthorized house owners are supposed to be penalized if found. City authorities are very much aware yet effective implementation of those rules are yet to happen. Water scarcity is common in the city; again the city authorities are incapable to provide sufficient water might force such illegal activities in practice. Historically the city has long been ruled by many dynasties such as Rashtrakutas, Sultanate, Bahamani and also part of Mughal Empire. Gulbarga Fort and several watch

Sasmita Rout, *Assistant Professor, Department of Geography, Central University of Karnataka, Kalaburagi, Karnataka, Email: sasmitar.rout@gmail.com*

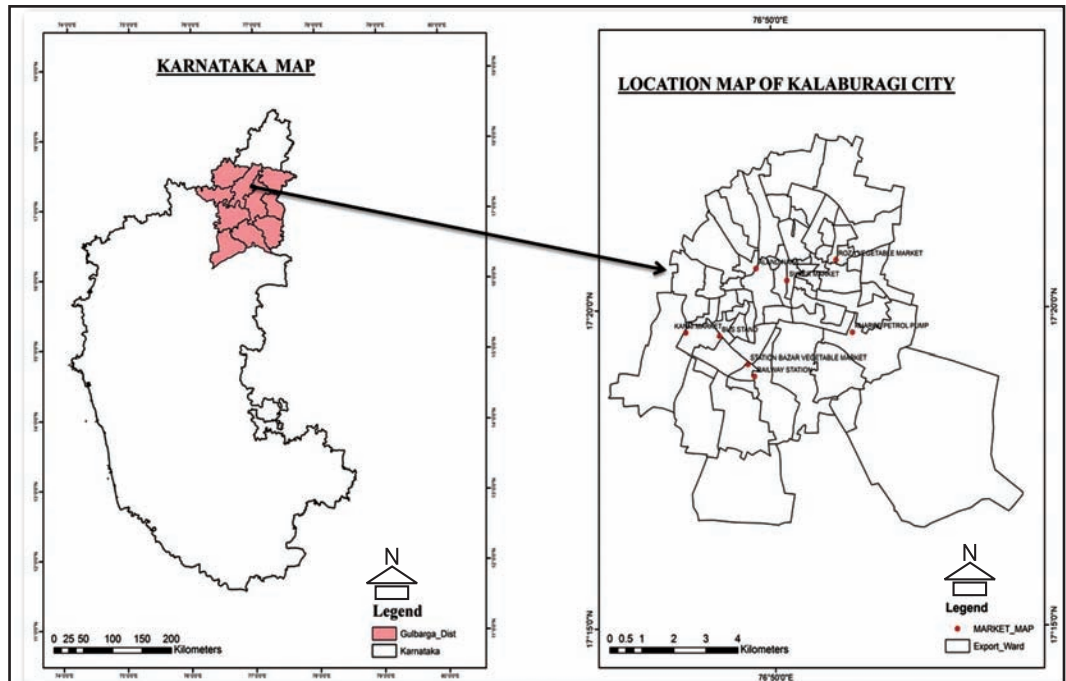**Fig. 1:   Location Map of Kalaburagi City**

Fig. 2:   Keri Bhosga

Fig. 3:   Gulbarga Fort

towers existing within the city are the expressions of the historical importance that the city carries (Fig. 3).

In past Gulbarga was part of Hyderabad State and was incorporated to Karnataka State (previously known as Mysore State) through the state reorganization act 1956. Beyond historical significance Gulbarga is a place for many religions like Sufi, Muslims and Hindus. One of the beauty of the city is the huge

Table 1:   Profile of Kalaburagi City

Status of the City	Class 1, Statutory town, historical city, 6th largest town in Karnataka, largest town in north Karnataka.
Population	5.5 lakh (census 2011), projected population will cross a million mark in 2021 (Directorate of Economics and Statistics, Karnataka).
No. of wards	55
Major parastatal agencies associated	Kalaburagi City Corporation, Kalaburagi Urban Development Authority (KUDA)
City planning status	Kalaburagi Master Plan 2021

Source: Compiled by the author

number of Muslim population coexists with Hindus and other minor religions such as Christians peacefully. Ms. Preeti, a resident of Gulbarga narrates her experience in the city and compared with other metropolitan cities like Hyderabad, Bangalore and Chennai. Ms. Preeti says, "Gulbarga is a peaceful city, and never witnessed *dangas* and religious conflicts among people here. Sometimes we get afraid when we see religious riots in Hyderabad or any other place. A kind of fear works yet nothing has happened so far" (Preeti, 2017). One can see the continuity in festivals of Hindus and Muslims in grand ways as people from both Hindu and Muslim religions share good percentage of population though the majority belongs to Hindu population (59.62%) yet the city houses 37.29% of Muslim population (Census 2011). Among Hindus a specific and sizable community lives in the Gulbarga city and they are well known as Lingayats. Lingayat community has a separate religious status within Hindus that actually believes in certain ideologies initiated by a 12th century reformer called Basaveshwara. Lingayats present them as a specific caste in social reality. More to this they are elitist group in the society and made up of different castes within Hinduism. These days a lot of discussion is going on around for providing Lingayats minority status by the state government (Times of India, 2018). Although reservation for minority status is controversial yet the possibility is high as Lingayats have wide connections among bureaucratic and political outfits across the scale (Table 1).

2.   INFRASTRUCTURE AND SERVICE PROVISIONS

Scholars have often mentioned that roads, drainage, and sewerage lines are the basic requirements in cities across India. Planners often start plan implementation from these three basic infrastructures. One can see poor quality infrastructure facilities in Gulbarga as a reflection of being located in the Hyderabad-Karnataka backward region. Major arteries are connecting railway station to other important areas like Kharge circle, Aland check post, and super market. State Highway-10 connects to Solapur city, and Ring Road connects Gulbarga and Hyderabad through Humnabad city and National

Highway connects to Bangalore, the state capital. Other than these major roads, internal street roads are poorly developed and maintained. Many street roads are *morom* roads except a few streets with *pucca* road connections. Recently developed areas are having concrete roads. Experiences of many local residents and rented people have narrated their bitter experiences in rainy seasons on the street roads. Mr. Dinesh Goldsmith, a resident of Kailash Nagar, near Shetty Complex said, "I hate this red mud every time I pass through this road to home. Even in a small rain I have to take my pant up for the muddy water on road. Though earlier day's experience was worst yet we need better roads to communicate. Our colony residents have been to Municipal Corporation office many times and I hope this time officials will listen us" (Goldsmith, 2017). Similar stories are there in other Indian cities especially in poorly developed parts.

Rarely old settlements have drainage and sewerage facilities. But in recently developed settlements Gulbarga Municipal Corporation is connecting the drainage and sewerage lines to a central location far away from the city where the corporation is planning for decomposing the waste with new techniques and methods (Niloor, 2018).

Unlike other major cities Gulbarga do not have a huge number of high rise buildings or skyscrapers. Except a few countable buildings such as like Big Bazar mall near Jagat Circle, Asian Mall, few private hospitals near court road, ESIC hospital on ring road, residential apartments of Asian Mall that has taken the attention as huge buildings. It is not necessary to have high rises to be called as big cities or better cities. My point is Gulbarga has very less orientation towards such developments. Seeing these kinds of developments, Gulbarga is seems like a self centric city. More of horizontal developments with maximum up to two story buildings in the city make the city look more of a residential centre. Recently, Kalaburagi Urban Development Authority (KUDA) has taken the initiative for preparing Kalaburagi Master Plan 2021 for the planned development of the city (Figure 4). In this plan the city will be expanded by incorporating 123 sq km comprising 43 villages. The plan also targets for the redevelopment and densification of the existing areas in the city (The Hindu, 2017).

3.   MARKET SPACE

Super market of Gulbarga takes the attention of many. Like the name one can find everything in super market, but from many shops located in different corners of the market unlike the modern 'super market (mall)' where one can find everything in one place. Dr. Babu says, "one will get from a pin to car to all hardwares to software. But one has to walk through places and put some effort

Fig. 4: Kalaburagi Master Plan 2021
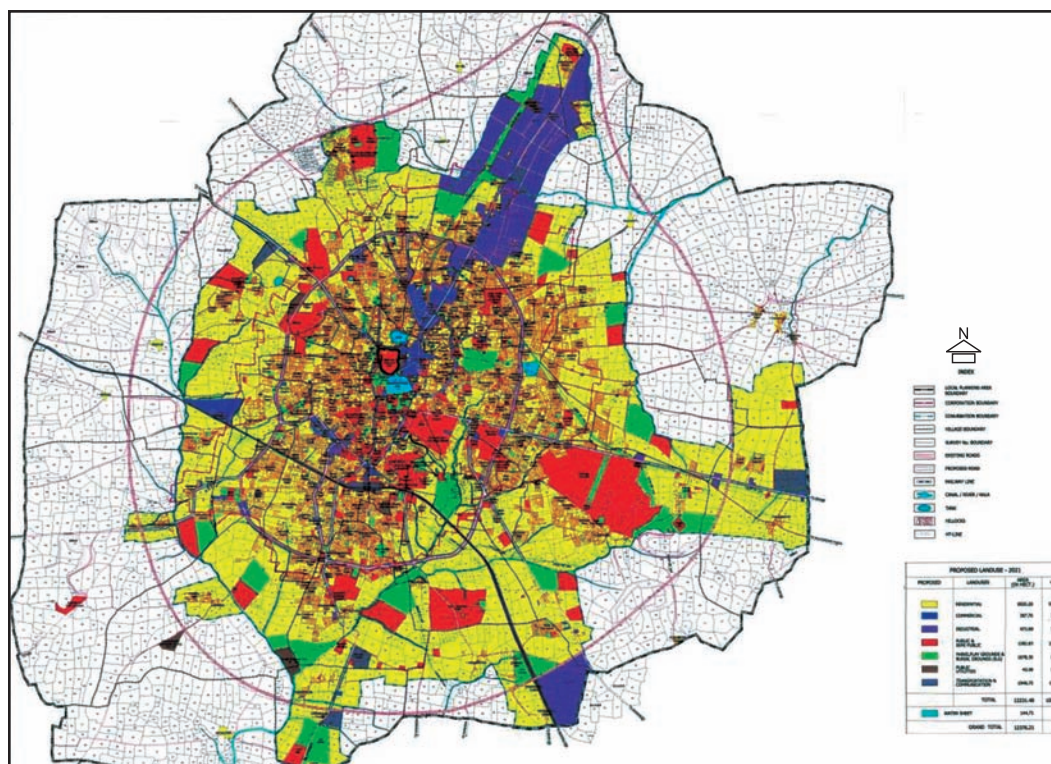
Source: Urban Development Department, Government of Karnataka

to find out the location for the object you need to buy" (Babu 2018). Super market has the historical importance from several dynasties. One can see many old buildings pre-occupied with commercial activities are now in deteriorating conditions. Like the old-city markets of many metropolitan cities like Koti in Hyderabad, Chandini Chowk and Sarojini Market in Delhi, Bada Bazar in Kolkata one can experience similar space in Gulbarga super market especially during the evening time. One has to hangs out with crowd for shopping even a small thing. At a glance one will feel unorganized, chaotic, unstructured developments within the market. Shops are in both the sides of the roads and shops extend through the streets to some distance. Beyond the established commercial buildings we can see many informal activities on road. Small vendors with vegetables, fruits, kitchen elements, other house chore elements, cloths; farmers with small amount of vegetables, fruits; vendors with dry fruits and nuts, puja (worship) elements and many small temporary shops with street foods. It sounds messy to listen and it looks also very much unstructured in reality. But what interests me is the structure of this unstructured, unorganized and messy reality. I was amazed to learn the segregation that really exists in the market space. One can learn that there is a street where head office of all the major banks operating within Gulbarga is located, another street is for cloth market, one street is for

utensils and house chore elements, other location is for all the grocery shops, one location is for the vegetable market, and one street is for hardwares. Similarly, one will find specific streets or locations where specific thing is available. And all important shops like medicine shops, cloth shops, hotels, jewelry shops and watch shops are located along with the main road. All necessary things are available in the super market but one must find the location in this chaos.

Daily markets are there in many places within the city. Often these markets run in morning like in Nacca Market, Kanni (Msk Mill, Fig. 5) market and Kharge petrol pump market (Figure 1). For fresh vegetable people depends on these markets. Early in the morning around 6 a.m. one will find farmers from nearby villages comes for selling their products. At first bidding among the farmers happens before they go for selling. Many farmers buy the vegetables there in the market itself in low prices and sell it in the same market with almost common prices.

From the continuous visits to Nacca market made me realize that these farmers do follow certain orders among themselves for occupying a place. They sit in same place every day and they maintained that regularly. Most importantly, farmers who have been coming from several years they have more say than the seasonal and temporary farmers. Vendors particularly sell fruits and dry fruits, spices (*masala*), onion, garlic and ginger. Gulbarga region is known as 'the land of *thoor or toor dal'*. So one will find farmers with varieties of *thoor dal* and even

Fig. 5: Kanni Market

with small quantities (4/5 kg.) they come to market to sell their own product. A few farmers stay back after the morning market till the evening to sell their products. For these farmers who commutes daily Gulbarga gives opportunity for earning money and buying other things that they are of need. In the super market the shop keepers sit in their own 100 or 200 years old houses and carry out commercial activities as inheritance from generations. But unlike them in Nacca (market) farmers-turned sellers occupies roadsides, which is temporary and uncertain in nature. This informal commercial space is not yet read how it's been read by scholars in million plus or metropolitan cities where they are constantly been in threat (Donovan 2008; Weinstein 2014). These temporary market spaces are the need of the city and one can see the coexistence of many

informal and formal activities unlike reading the informality as a disorder in an orderly place.

4. CONCLUSIONS

An internet search made me realize that the intellectual scholarship that has been invested on Gulbarga city often talks about the water issues especially ground water problems, scarcity of drinking water in some ways and possible recharge initiatives (Patil, 2010). Some studies are carried out on urban sprawl (Ramachandra and Aithal, 2012). Beyond these technical writings here the attempt made is to read the city in a glance and then approach the everyday reality. Of course this is an initial attempt and needs specific methodological interventions for in-depth understanding

Fig. 6: Bullock Carts on Major Street

and theoretical development. For me, though Gulbarga is an old and historical city, less than a city it looks like a semi-urban area at a glance. Residents are very much cordial, friendly and maintain relations with neighbors well. Every evening especially in the time of festivals entire Gulbarga roars with the music from temples and mosques. There are occasions when the festivals get celebrated throughout nights unlike the major cities where after 10 pm loud sound is not permitted. Slowly people are adapting to the changes from other modern cities. Many old buildings are getting restructured especially the roads approaching to Timapuri circle from the super market. New houses that are being constructed recently are most likely in apartment form, which is basically made for renting purposes. Several educational institutions such as Central University of Karnataka or hospitals like ESIC hospital has created scope for outsiders coming to the city in recent years. Despite this Gulbarga still holds characteristics of rural in many ways, which is reflected in its street roads, frequent bullock carts (Fig. 6), horse-carts on road, housing structure and interactions people have like in villages. This in turn makes the city more lively and interactive instead of cities where often people do not know their neighbors next door. Though these rural phenomena are changing yet these processes are slow and patchy in Gulbarga. At a glance Gulbarga looks disordered but there are orders within these unstructured and chaotic spaces. In many ways Gulbarga needs planned interventions especially in infrastructure development and service provisions. Possibility for planned

development may increase with an effective, efficient and implementable plan with a porous, flexible and accountable organizational structure and work practices of the city.

REFERENCES

Census, (2011) http://www.census2011.co.in/data/religion/district/256-gulbarga.html, Downloaded the information on 1st March 2018.

Directorate of Economics and Statistics, (2013) Projected Population of Karnataka 2012-2021 (Provisional), http://des.kar.nic.in/docs/Projected%20Population%202012-2021.pdf, Downloaded on 3rd April 2018.

Donovan Michael G. (2008) Informal Cities and the Contestation of Public Space: the Case of Bogota's Street Vendors, 1988-2003, *Urban Studies,* Vol. 45, No. 1, pp. 29-51.

Dr. Babu, (2018), Informal interaction happened with the respondent in 4th January 2018, The respondent is a faculty in Department of Geology, Central University of Karnataka.

Goldsmith Dinesh, (2017) Informal interaction happened with the respondent in May 2017, He is a resident of Kailash Nagar, near Shetty Complex, Gulbarga.

Niloor Sivanand, (2018) Informal interaction happened with the respondent in January 2018, He is a resident of Shivaling Nagar, Gulbarga.

Patil Nirdosh et al. (2010) Study on the Physio-Chemical Characteristics of Ground Water of Gulbarga City (Karnataka), *IJABPT,* Vol. 1, No. 2.

Preeti, (2017) Informal interaction happened with the respondent in November 2017, She is a faculty in Engineering Department at Central University of Karnataka and a resident of Gulbarga.

Ramachandra T.V. and Bharath H. Aithal, (2012) Understanding Urban Sprawl Dynamics of Gulbarga- Tier II City in Karnataka through Spatio-Temporal Data and Spatial Metrics, *International Journal of Geomatics and Geosciences,* Vol. 3, No. X.

The Hindu, (2017) Master Plan Proposed for Developing Kalaburagi, http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/master-plan-proposed-for-developing-kalaburagi/article19389303.ece , Published on 30th July 2017, Downloaded on 3rd April 2018.

Times of India, (2018) Minority Religion Status for Lingayats. How the Decision can impact Karnataka Elections, https://timesofindia.indiatimes.com/india/how-the-lingayat-decision-can-impact-the-karnataka-elections/articleshow/63377894.cms, Published on 20th March 2018, Downloaded on 3rd April 2018.

Weinstein Liza, (2014), The Durable Slum: Dharavi and the Right to Stay Put in Globalizing Mumbai. University of Minnesota Press.

Urban Development Department, Government of Karnataka. http://www.uddkar.gov.in/MASTER%20PLANS , Accessed on 1st April 2018.

Smart Cities Mission:
A Case of the Indian Urban System

Ashwani Luthra, Ph.D.

Abstract

Smart Cities Mission (SCM) is a prestigious and ambitious plan of central government with an objective to better the quality of life of Indian cities through retrofitting, city renewal, city extension and PAN city initiatives. But lack of vision about future urban pattern of the country by central and state governments and politics played in the selection of smart cities might entrench imbalanced distribution of urban population and polarized urban system. SCM is expected to lead to urban sprawl and poor might remain deprived of enjoying the benefits of smart cities. E-applications in almost every sphere of urban living such as housing, transport, services, amenities and even governance might adversely impact the informal sector and unskilled workers. An examination of concept of smart cities, its selection process and distribution of selected cities shall provide some insight into the SCM. Possible implications are listed as a way forward for further research once the smart cities see the light of the day in India.

1.   INTRODUCTION

Historically, difference in pace of urbanization have resulted in differing magnitudes of urban problems such as housing shortage, slums, traffic woes, polluted air and water, urban congestion, safety, security, deficient and costly infrastructure, etc. Handling differing nature and magnitude of urban problems, infrastructural concerns, employment and financial inefficiencies are major concerns for governments. Smart cities concept is visualized as an approach to solve these problems through retrofitting and redevelopment of older city areas and promoting White Field developments. India is new to introduce the concept by experimenting with 100 cities, list of 20 selected cities being released on 28 January 2016. But the politics of their selection has been questioned at various forums. However, at least a beginning is made to bring out positive and negative aspects of the concept. India started with smart cities movement in a haze but after two years, the Indian version of smart cities is getting clearer. Government has come out with guidelines and norms for different sectors and actors covered to develop these cities. One glaring outcome of the Smart Cities Mission has been that different state governments have started developing their cities on the lines of smart cities guidelines. India urbanization has occurred at 31 per cent in 2001-2011 (Census of India, 2011) and expected to grow to 45 per cent by 2051 (MGI, 2010) need to manage its cities in a smarter manner to attain better quality of life in its

Ashwani Luthra, Ph.D., *Professor, Guru Ramdas School of Planning, Guru Nanak Dev University, Amritsar*

cities. Also, urban India contributing to 70 per cent to its (GDP) gross domestic product (GDP of India, 1951-2011) and expected to touch 75 per cent mark by 2031 (MoUD. 2014) make the cities productive places. In line with these facts, Capital City Committee, 2014 states that 'Smart Cities' concept is a new global approach to designing, planning and managing cities, with its goal of improving people's lives and making cities more productive, liveable and sustainable (MoUD. 2014). Indian Prime Minister's declaration to develop 100 smart cities is an act of preparedness to future urbanization.

2.   CONCEPT OF THE SMART CITIES

Smart city has been a buzzword that has been inducted in Indian urban atmosphere by the 'Information and Communication Technology' sector, where the word 'SMART' is being addressed as Self-Monitoring, Analytical, Reporting and Technological in the context of a smart city. City, being visualized as a large settlement with an aspirational quality of life, needs to be smart from top to bottom by following an integrated approach on economy, mobility, environment, living and governance to attain sustainability, reliability, safety, security and transparency. It should not be smart by looks (aesthetics) but in contents as well i.e. meeting the needs of its inhabitants in all respects. The genesis of the concepts of smart cities is that they are well managed, integrated, digital entities that provide infrastructure in a reliable, cost effective and sustainable manner while maintaining and improving the quality of life of its inhabitants. It seems realistic that if something can be handled efficiently, reliably and systematically, with or without the use of technology, then it should be designated as a smart act as it pronounces growth and quality living. However, the document of Ministry of Urban Development titled as 'Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, 2014' states that 'smart city concept facilities better living experience for human kind, declining dependency on contingencies by using information communication technology (ICT) enable development of smart communities. It states that a smart city uses information, communication and technology to enhance its livability, workability and sustainability. A smart city is build-up by three key basic functions: information collection, communicating and crunching (analyzing)'.

Lot of emphasis has been laid on application of ICT in every sphere of urban life in a smart city. But though ICT solutions will bring something but it plays a miniscule role in attaining smart cities agenda because an integrated approach from day one of the development of a city with bring about social, economic and environmental sustainability. Smartness should be in its functioning, not in its appearance. If vertical and horizontal integration in urban living is attained, with or without the use of technology, that means 'sustainable smart city' is

achieved. Cities need to fulfil the basic needs of their inhabitants, belonging to all sections of the society. But some sections might not be acquainted with the use of ICT. So, their handicap can be ruled out by simplified and transparent system. Thus, essentiality of ICT in smart cities movement seems to be an industry driven phenomenon for its individual gains.

In this sense, a smart city is one that portrays four 'S' viz., style, sophistication, solution and swiftness. Style indicates aesthetics, grace and elegance; sophistication presents maturity, pragmatism, seasoning, worldliness and technical; solution reveals intelligent and result oriented application; and swiftness indicates prompt, analytical, quick and self-action. Their application in urban environment shall bring about sustainable and smart urban living. It is not the provision of smart infrastructure that makes a city smart, but it is the smart use of that infrastructure by the inhabitants that makes the city smart.

3.   CONSTITUENTS OF SMART CITIES

Human settlements are composed of four basic components viz. the natural resources, people, socio-cultural characteristics and economic base (Figure 1). It is the interplay of these components that brings about growth and development in the settlement. Availability of water, fresh air and vegetation attracts the man to live on the land. Growth of population tends to develop socio-cultural ethos to organize and operate the society or community. But it is the economic base, which tends to utilize the natural resources and people in an optimum manner so that human settlements start growing. Small hamlets get developed into cities through different phases of settlement growth. Infrastructural requirements crop up consequent to increment in number of souls residing in the settlement.

Thus, the differential in the nature and magnitude of infrastructure results in differentials in the size of the settlements. The settlements with advanced infrastructure and proficient users tend to grow faster than otherwise. Wise application and adoption of advanced technology in using the natural resources and infrastructure by the inhabitants to suit their socio-cultural and economic environments make a human settlement 'smart'. Smart use of natural resources tending to zero waste, smart people having full knowledge to optimally utilize the

Fig. 1: Urban System Composition
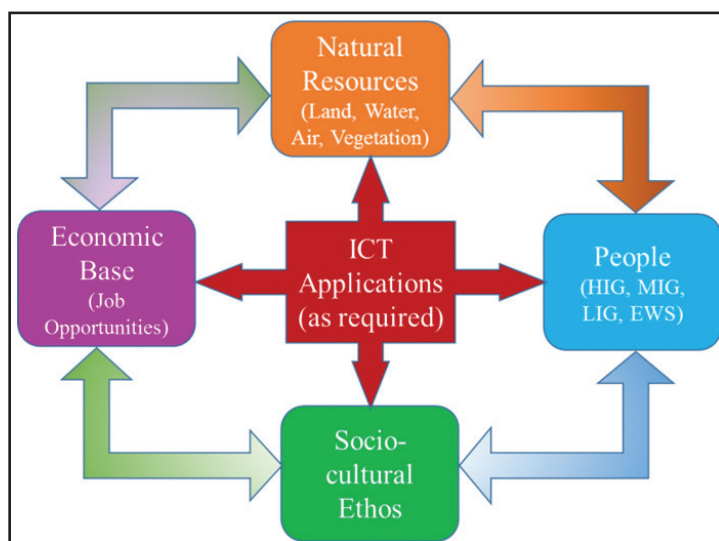
resources to suit their socio-cultural characteristics; and smart economic base that generates job opportunities and boosts the economy of the nation with or without use of ICT applications, constitute a 'Smart City'.

A smart city should be developed on the principles of inclusiveness, sustainability, livability, uniformity, responsibility and transparency to depict the interests, emotions and capabilities of the society. The should be designed, planned and developed in a manner that society's housing, mobility, education, health, services (water supply, sewerage, drainage, sanitation), safety and security, recreational and social needs are fulfilled in an inclusive and sustainable manner by following the principle of uniformity and equality. Figure 2 reveals the areas of concern to smart cities. Interplay of integration (economic development and public service delivery plans), pragmatism (practical, achievable, financially viable bulk investment projects) and participation (community representative-local businesses- residents) is the way to the success of SCM. Energy efficiency, travel demand management, improved access to information, environmental sustainability, use of clean technologies, use of ICT, participation of private sector, citizen participation, good governance have been identified as the instruments of smart cities to counter the challenges and issues of existing urban settlements (MOUD, 2014). The proposed strategies for SCM include city improvement (retrofitting in 500 acres area), city renewal (redevelopment in 50 acres area), city extension (Greenfield development in more than 250 acres) and PAN city initiatives by applying smart solutions to larger parts of the city (MoUD, 2015).

Fig. 2: Focus Areas of Smart Cities

4. SMART CITIES - POLITICS AND IMPLICATIONS

In the absence of an urbanization policy, Indian urban system presents an imbalanced urban pattern where about 70 per cent urban population lives in only 5.89 per cent class-I urban settlements and only 53 metropolises inhabit 42.6 per cent of the total urban population of the country(Census of India, 2011). Small towns i.e. class IV, V and VI, collectively house only 7.5 per cent of the total urban population of the country. Such polarized tendencies of urban population have been the major reason for the urban problems, for which the central government has

been coming up with projects and programmes through various missions to solve them and improve the urban living, SCM being one amongst those. Ministry of Urban Development, Government of India in 2014 proposed the following criteria to select 100 cities (MoUD, 2014) viz:

- One satellite city of each of the cities with a population of 4 million people or more (9 cities);
- Most of the cities in the population range of 1-4 million people(about 35 out of 44 cities);
- All State/UT Capitals, even if they have a population of less than one million (17 cities);
- Cities of tourist, religious and economic importance not included in above (10 cities); and
- Cities in the 0.2 to 1.0 million population range (25 cities).

The logic of fixing the number of cities in each category is unclear. The randomness in it is not supported by any study on urbanization or urban pattern. The focus of the polity has remained on million plus cities, as 53 cities out of 98 are to be selected from metropolises or mega-polises. Therefore, effort has been to include all the million plus cities into SCM, though the focus might be on White field development in the satellite cities surrounding them. Probably, the reason for their selection has been that these cities are facing lot of urban problems in larger proportions, both qualitatively as well as quantitatively. Migration to the bigger urban areas is occurring on the account that they provide better job opportunities, higher per capita income and better infrastructure. Therefore, making these cities as smart cities will create more job opportunities, increase the per capita income and better the infrastructure. Hence, instead of counter-urbanization to de-polarize the urban concentration, the result would be other way round. Such an approach shall create more imbalances in Indian urban system.

An analysis of selected smart cities reveals that out of 113.50 million selected urbanites, about 84.75 million (75 per cent) are housing in metropolitan cities. As per the categorization proposed in URDPFI guidelines, out of 98 selected smart cities, 4 mega-polises and 31 metropolises house about 76 per cent population (Figure 3). Contribution of small towns to be smart is meagre, as 8 selected towns house only 0.28 per cent urbanites. Also, 33 selected medium towns house only 9.49 per cent urbanites. Thus, 41 small and medium sized smart towns shall make 9.77 per cent smart urbanites.

Since the focus of the Government has been on cities, therefore selecting lesser number of towns is understandable. But change of polity has reversed

Fig. 3: Distribution of Smart Cities by Number and Population
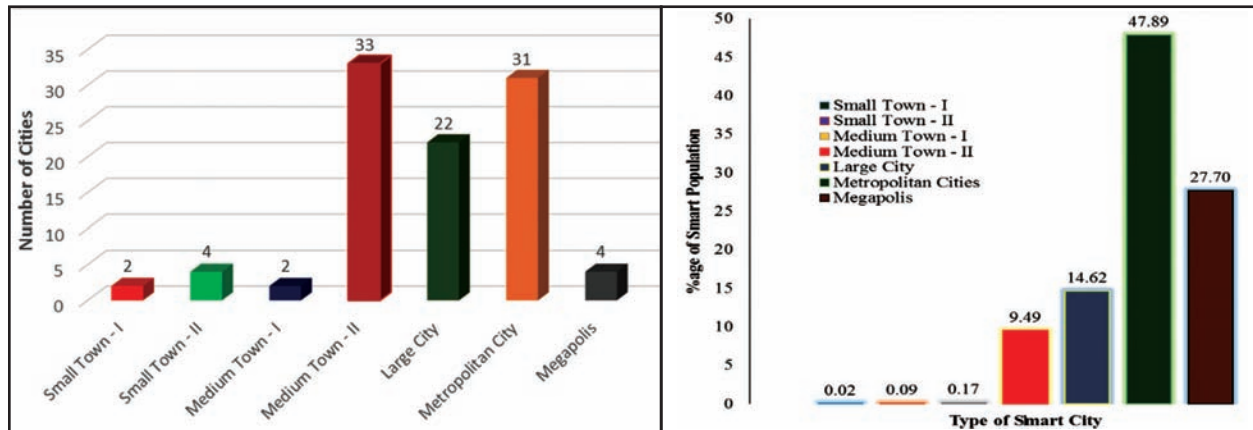
the focus of urbanization. Whereas funding under Jawaharlal Nehru National Urban Renewal Mission and Provision of Urban Amenities to Rural Areas was seen as a counter urban polarization device, the SCM shall reverse the process. Future urbanization was projected to be small and medium towns biased and international and national investors were eyeing business in these towns. But SCM shall turn the trend to bigger cities.

Even the distribution pattern of selected smart cities presents an imbalanced future. Table 1 reveals that west of India is the most beneficiary region from SCM, as 18 cities housing 404.77 lakh (35.66 per cent) urbanites will benefit from the mission. Central northern region comprising of Delhi, Haryana and Uttar Pradesh shall gain the second most, as 26 cities have been selected for SCM and shall benefit 26.81 per cent of the smart population. South eastern states are the third most beneficiary states that would house 13.42 per cent smart population.

South and south western states are the least beneficiaries, as only 3 cities benefitting 0.63 per cent of the smart cities population have been selected. Central, eastern and northern states will benefit about 6.66 per cent, 5.51 per cent and 4.67 per cent population respectively. The north eastern and south eastern regions being less urbanized are going to gain lesser from SCM. Further research on urbanization pattern and smart cities beneficiaries in different region can through a deep insight into the relationships and reasoning for selection of smart cities in respective states. But evidently selection of most urbanized cities raises questions for urban system mechanisms. In addition to the selection criteria laid by the Central Government, the selected cities are required to:

• Have an existing Master Plan or one that is likely to be approved shortly and have such a validity of at least 10 years;

Table 1: Number and Population of Smart Cities by Region

Region	No. of Cities		Population		
	Number	Percent	Number (Lakh)	Percent	
West	18	18.37	404.77	35.66	
Central North	26	26.53	304.32	26.81	
South East	14	14.29	152.34	13.42	
Central	7	7.14	75.62	6.66	
East	12	12.24	62.52	5.51	
North	6	6.12	53.05	4.67	
North East	8	8.16	24.20	2.13	
North West	4	4.08	51.01	4.49	
South	2	2.04	6.13	0.54	
South West	1	1.02	1.00	0.09	

Source: Derived from Annexure - A to Guidelines

- Have digitized spatial and GIS maps;

- Issue all clearances for projects in a collegiate manner using online processes and in a time bound manner;

- Have electronic/online seeking and delivery of all public services;

- Have transparent and time-bound procedure of granting free right of way for laying optic fiber networks, water supply lines, sewerage systems, draining systems and other utilities (Not more than 7 working days);

- Create an IT-based platform for effective communication with the citizens and keep them abreast of various activities and plans of the city;

- Adopt tariff structures that are affordable for the poor and yet enough to recover cost including capital expenditure. In doing so the State/Cities could use their own resources to bridge the gap between the revenue and expenses.

- Create open data platforms that are regularly updated;

- Make all information and decisions taken available in the public domain; and

- Setup a regulatory body for all utility services such as water supply, etc.; so that a level playing field is made available to the private sector and tariffs are set in a manner that balances financial sustainability with quality.

With so many conditions imposed, MoUD had tried to examine the preparedness of the cities and states to develop smart cities, apart from bring transparency in the selection process not only for itself but for the states as well. But the scenario is that many states have manipulated these conditions and

selected their preferred cities on the will of polity. Overnight, the municipal systems and records have been updated to fulfil the conditions in favour of their preferred cities for SCM. Neither the Central Government nor the State Governments had a deep insight into the urban imbalances the country or the states have been experiencing. At the national level, differential distribution of number to cities to the states in no way depicts any urban system strategy anywhere.

It is also surprising in the selection of the cities by the states that they have selected the JnNURM towns or cities again. A comparison of list of smart cities and JnNURM towns depicts that as many as 43 cities selected under SCM are the same that have got the benefits of the central assistance under JnNURM as well. Dual benefit within a span of 10 years reflects lack of vision of the policy makers and polity with regard to urban issues and their counter measures. Some of these smart cities are also going to be benefited by Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and Heritage City Development and Augmentation Yojana (HRIDAY). Focus of investments in few cities will result in higher investments and creation of jobs in few cities, thus furthering the imbalanced urban pattern.

Fig. 4: 20 Smart Cities of India

The selection process was based on the marks scored by different municipalities for the purpose of selection in the first phase of selection of mission cities. Though transparency was ensured but the selection of 20 cities (Figure 4) in the first phase again reflects lack of vision on the part of Central Polity. Figure clearly shows that north western, central north and majority of central south could get reap the benefits of SCM in the first phase. The cities that are already highly urbanized and have established delivery mechanism for urban facilities are ought to score high compared to less urbanized states with low infrastructure index. However, second phase as flashed on the MoUD official website, is expected to benefit almost all the regions and the

states of the country. But still the question of repeated financial assistance to few cities without an urban vision is questionable.

India is a country of diversities across its people, economies and regions. Therefore, the SCM needs to address the evident and most glaring implications and issues to further its cause. Some of them are listed below for further investigation:

- For whom are the smart cities being developed? Will they eliminate the imbalance between have (s) and have not (s)?;
- Will smart cities really take care of planned development or generate urban sprawl and conurbations?;
- Will smart solutions be cheaper or the poor will be deprived of the smart infrastructure created in these cities?;
- Can India afford smart solutions keeping note of its economic status?;
- Whether cohesive, coherent and congenial environs of older cities are at stake due to retrofitting and redevelopment strategies being proposed under smart cities guidelines?;
- Whether human value systems remain intact with ICT solutions? Lesser physical contacts reduce attachments, respect and ethics – an experience of the West.;
- Will invitation to foreign capital lead to money drain?;
- Will ICT applications generate involuntary unemployment of unskilled workers?;
- Will smart cities not increase regional disparities through imbalanced smart urban system?;
- What about informal sector in the wake of e-businesses?; and
- Will 100 smart cities become model smart cities for other cities of India when they are different in morphology, character, physiographic, value system, socio-economic characteristics, and environmental conditions?

Although efforts are on from the side of government to develop model guidelines and norms, but differentials in climatic, physiography, urban demographic features, socio-cultural characteristics, economic base, infrastructural requirements and capacity constraints of governance leave ample room for the state governments to develop their own mechanisms to develop their cities 'not only by smart technology' but by 'smart actions'. The above listed implications need further research to evolve relationships between smart city indicators, strategies and quality of life in the light of local conditions and constraints. Also, separate toolkit for each of the smart indicators i.e. living, mobility, energy, environment, IT and communication, safety and governance, needs to be developed to achieve the objectives of SCM.

5. CONCLUSIONS

Smart Cities Mission has been devised with a view to providing tangible benefits to economy, and environment in the selected cities and also to act as models for other urban settlements of the country. But their selection process is expected to create an imbalanced urban system. Instead of reducing or eliminating the polarized urbanization tendencies, congregation of investments, jobs and infrastructure will boost polarization. Sprawl and conurbation tendencies are expected to increase. Application of e-technologies might affect the informal sector, men and material, adversely. An intelligent interplay of the existing conditions and future vision can bring about smart communities, thus bettering the urban quality of life.

REFERENCES

Capital City Committee (2014) *Smart cities*. Retrieved from http://capcity.adelaide.sa. gov.au/cities/ smart-cities-feature-article/. Accessed on 12.12.2014.

Census of India (2011) *Population Totals*. Registrar, Census of India, Government of India, New Delhi.

GDP of India (1951-2011). Retrieved from https://www.google.co.in/search?q=gdp+of+india +from+1951+to+2011andespv=2andbiw=1280andbih=699andsite=webhpandtbm=ischandt bo=uandsource=univandsa=Xandved=0ahUKEwjLvM_m4PfLAhXOCY4KHcGDDuMQsAQIQw. Accessed on 05.04.2016

Hitachi (2014) *Hitachi's concept for smart cities*. Retrieved from http://www.hitachi. com/products/ smart city/ vision/ concept/index.html. Retrieved on 14.12.2014.

MoUD (2014) *Draft concept note on smart city scheme*. Ministry of Urban Development. Government of India. http://indiansmartcities.in/ downloads/CONCEPT per cent20NOTE-13-10-2014 _mkgnew.pdf. Retrieved on 19.12.2014.

MoUD (2015) *Smart cities: mission statement and guidelines*. Ministry of Urban Development, Government of India, New Delhi. June. Retrieved from http://smartcities. gov.in/writereaddata/SmartCityGuidelines.pdf. Accessed on 10.11.2015.

Puri, A. (2014) *What are smart cities?* The Hindu, August 15. Retrieved from http:// www.thehindu.com/todays-paper/tp-features/tp-propertyplus/what-are-smart-cities/ article6322204.ece. Accessed on 15.12.2014.

MGI (2010) *India's Urban Awakening: Building Inclusive Cities, Sustaining Economic Growth*. McKinsey Global Institute, New Delhi. April.

Sengupta, S. (2014) *Smart city – a utopian concept?*. Times of India, Hyderabad. September 17. Retrieved from http://timesofindia.indiatimes.com/city/hyderabad/Smart-city-a-utopian-concept/articleshow/ 42656817.cms. Accessed on 10.12.2014.

Evaluating Traffic Circulation System: Possibilities and Practicalities in Sardarpura, Jodhpur

Ansuya Tater

Abstract

Orderly development of the community needs a safe, efficient and convenient circulation system for people of all ages. This research discusses circulation system of a spatial unit and focuses on unit form and its functionality to identify to what extent future development responds to the existing context, contributes to the visual image of the area, and addresses functional requirements, such as safe and efficient circulation, and is discussed under three design categories street layout, road reserve and intersection control. Urban design combines planning metrics in order to determine street layout and accessibility of neighborhoods, interactions between buildings and public spaces, provision of green spaces. Therefore, it has the potential to influence physical activity and wellbeing and it is the discipline that indirectly determines accessibility of the built environment.

1.   INTRODUCTION

Jodhpur is the second largest city in the Indian state of Rajasthan and regional centre for most economic activities. This is most centrally located city in western Rajasthan (Fig. 1) and the case study has been taken from its centrally located spatial unit known as 'Sardarpura Planning Unit'. This residential planning unit was planned in 1930 on gridiron pattern. It is segment of the city land design with arranged basic building blocks and total 850 blocks of plots with big sizes such as 50'X55', 57'X120', and 120'X140 feet were planned in the site area where the people have selected their places to live and to work, to learn and to trade, to play and to pray. It is a mosaic of different activities, which woven together by a grid network of streets and transportation routes.

Planned street system, non-motorized transportation routes and integration of non-motorized circulation system with the overall subdivisions and surrounding areas are components of the circulation system. The need of the study arises from the fact that these component were part of the plan in context of Sardarpura spatial unit but as developmental activities grew rapidly various changes have started occurring which adversely effects not only on visual image of the area but also its form and functionality as mentioned in Fig.2. This unit has strong daily interactions with neighboring and peripheral sites consequently the well-defined planned hierarchy of roads has been disturbed. Serious issues are generated day by day such as inadequate space for pedestrians, missing

Ansuya Tater, Urban Planner, Geo-Planner Services, Jodhpur, Rajasthan, Email: ansuyatater@ gmail.com

Fig. 1: Sardarpura Planning Zone and Location of Site

Source: Author and UIT approved plan)

Fig. 2: Existing Issues of Site

Source: Primary survey, 2017

sidewalks, inadequate amenities, parking space and public realm, unhygienic conditions and inconvenience due to encroachments, etc.

2. SARDARPURA SPATIAL UNIT: THE STUDY AREA

Sardarpura spatial unit is surrounded by old walled city in north direction, Ratanada and PWD colonies in east, Shastrinagar planned colony in south and

Fig. 3: Research Framework
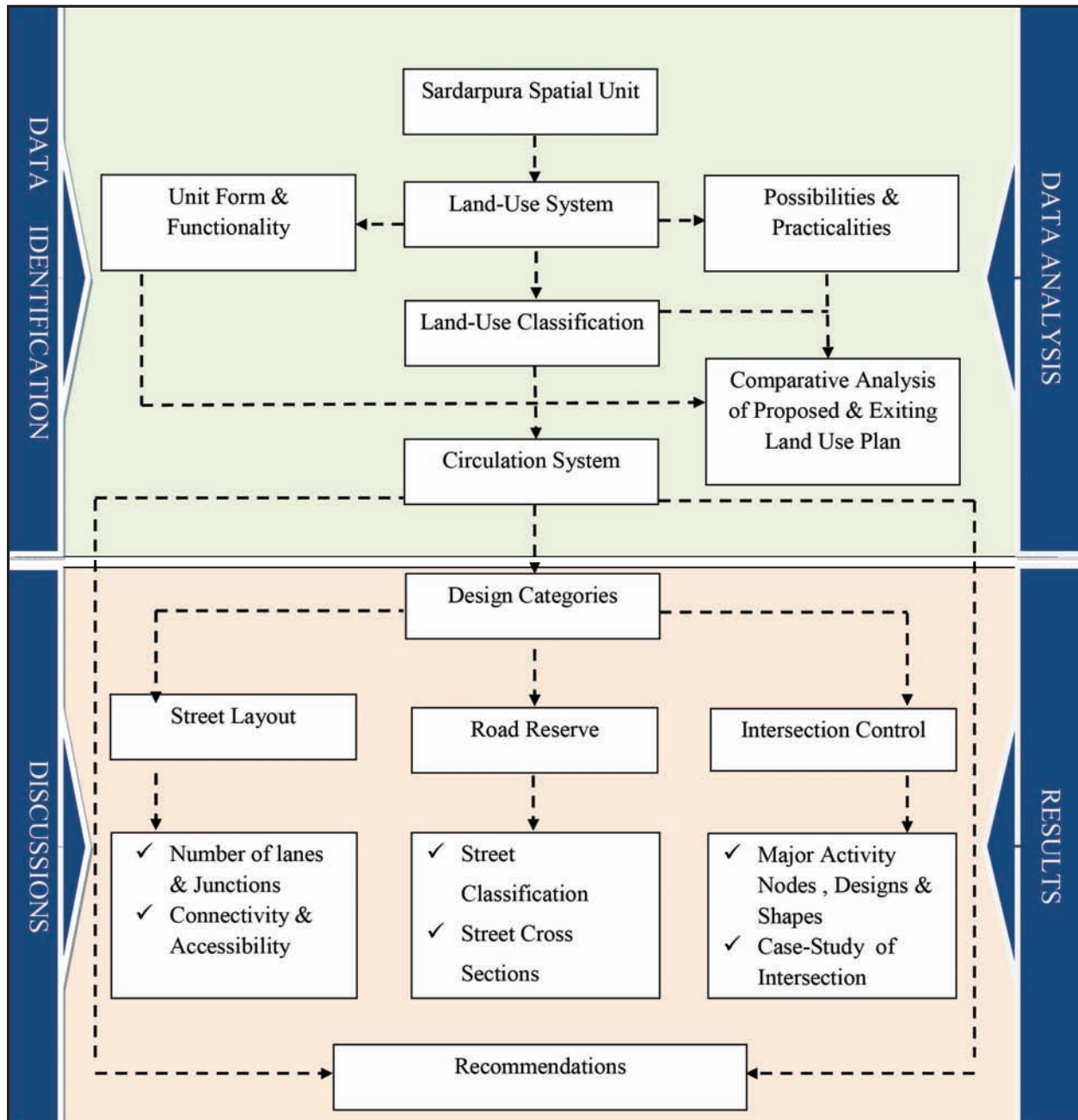
Source: Author

Bakhtawarbaag, Shivanchi Gate in west direction. This unit consists of a total 4 municipal wards, which are 23, 24, 30 and 31. Ward number 30 is highly dense and ward number 23 is lowest dense area of site. The site is spread over 535 acres of land and as per JMC records 50,003 persons reside in these wards. Fig. 3 shows total built up area is 362.83 acres and 171.87 acres is calculated as open

land. Most of plots, which are shown as vacant area are part of litigation or land conversion.

Grid based cohesive streets of the spatial unit foster a distinct sense of place identity. This site is the centre of residential, commercial and educational activities. Investigation and observations of the area highlight changes in the existing scenario and land use statistics of the unit along with circulation system. As compared to other planned areas of the city, this unit is highly commercialized and study outcome shows presence of strong commercial existence, which further invites traffic in this area. This research has two objectives:

To reflect on characteristics of the Sardarpura spatial unit land use system or where activities are located, and the circulation system or how the location of activities are linked.

To evaluate the impact of developments on circulation system and to identify circulation opportunities and challenges at spatial unit levels.

The study is based on primary as well as secondary data and it is analyzed both quantitatively and qualitatively. The methodological tools like observation, perception as well as modern methodological tools like e-mail, internet surfing, computer based software including ArcGIS, AutoCAD and temporal satellite Imagery 2016, Google earth platform were used for data analysis. The perception study is developed, which was canvassed for securing necessary information regarding the circulation system of spatial unit. Field verification was carried out and summary tables, graphs and maps were generated to arrive at certain conclusions.

3.   COMPARATIVE ANALYSIS OF LAYOUT PLAN AND EXITING LAND USE PLAN

According to the layout plan 83 per cent area is designed for residential purposes, 2 per cent is for commercial use, 1 per cent is under other community facility, 4 per cent area is reserved for parks and open spaces and 10 per cent area is designed for circulation. Changes in land use statistics identified through the comparative analysis of layout plan and ELU (Figs. 4 and 5). Highest changes seem to take place in commercial and residential land uses where 83 per cent residential has been convert in 70 per cent and 2 per cent commercial use converted in 16 per cent. One per cent area increased in other community facility while park, open space area is constant with 4 per cent and circulation area decreased with 2 per cent.

Area from ward number 31 has been taken as an example to explain changes in land use characteristics of the site. Land which was used as bungalows in 1931 now subdivided in residences plots and commercial uses. Plots along residency road were reserved for bungalows are now commercial buildings. Shops sites or market square area have been sold and whatever space is left reserved for

Fig. 4:   Analysis of Approved Layout Plan and Existing Land Use Plan
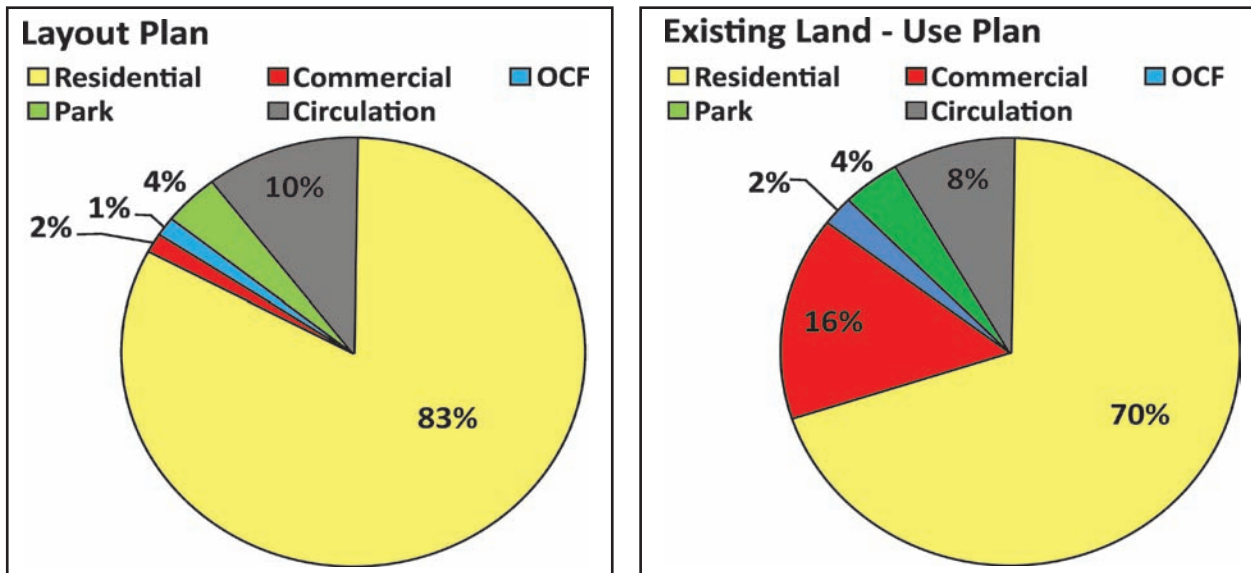
Source: UIT and author

Fig. 5:   Comparative Analysis of Spatial Unit with Pieces Periodic Maps.
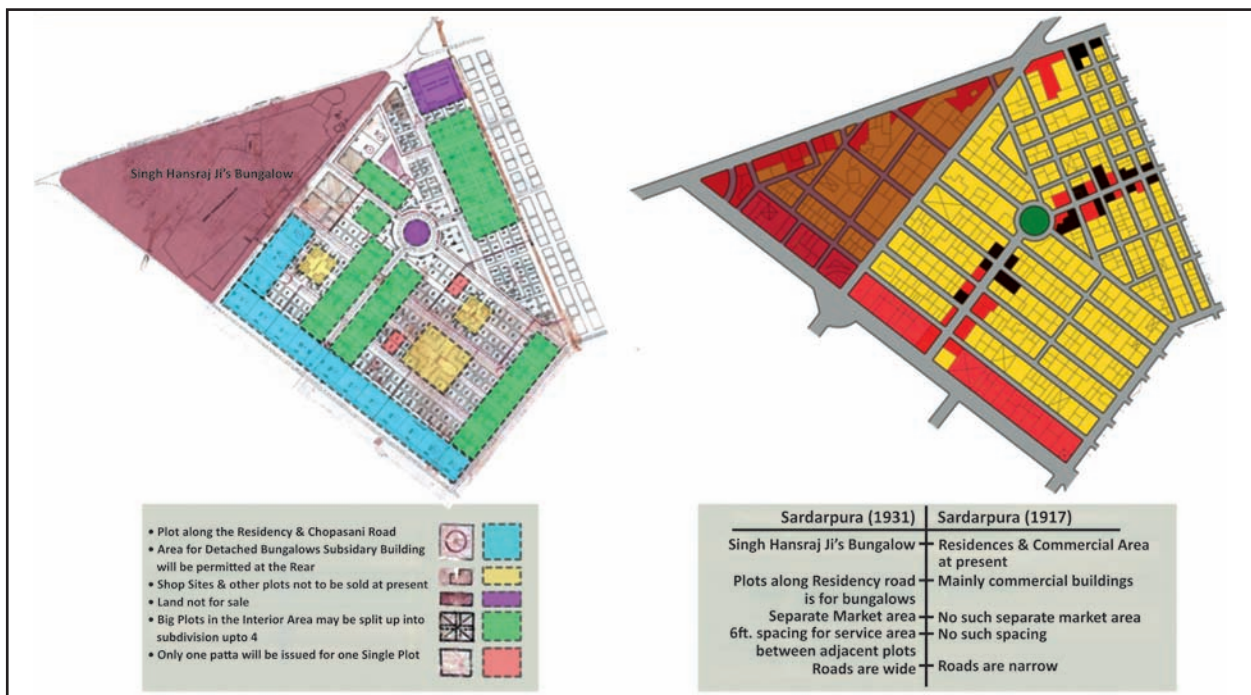
Source: UIT and author

circulation along the plazas have been used as built-up and today it is too difficult to identify concepts such as market squares on ground which was part of 1930s approved plan.

4.   CIRCULATION SYSTEM

4.1   Street Layout

Circulation plan of site complements the land use plan and creates an interconnected system. It also provides the community with convenient access to the arterial/sub arterial and highway network. Number of lanes (either existing or planned) ensures that adequate capacity is accounted for vehicles, while balancing the need for other modes on streets (Draft Austin street design guide, June 2017, pp 5-10). The design of circulation plan emphasizes visual and physical connectivity. The landscaping, including street tree canopies provide shade and create planting areas. Jalori gate-12th road and 12th road- residency roads are sub arterial roads of the site. A,B,C,D and Jalori Gate-Nehru Park are collector roads. It link local streets to major roads. They are the unit 'arrival' street. They carry approximately 3,000 – 6,000 vehicles a day. There are 65 junctions in the plan in which 32 cross, 28 T, 2 Y and 3 are other junctions exist in the site (Fig. 6).

As per analysis of existing land use distribution along the Chopasani road, B,C and D roads of Sardarpura 29.87 per cent area is reserved for residential uses, 42.85 per cent commercial and 27.28 per cent is for mixed land uses. As illustrated

Fig. 6:   Sardarpura Circulation Layout Plan
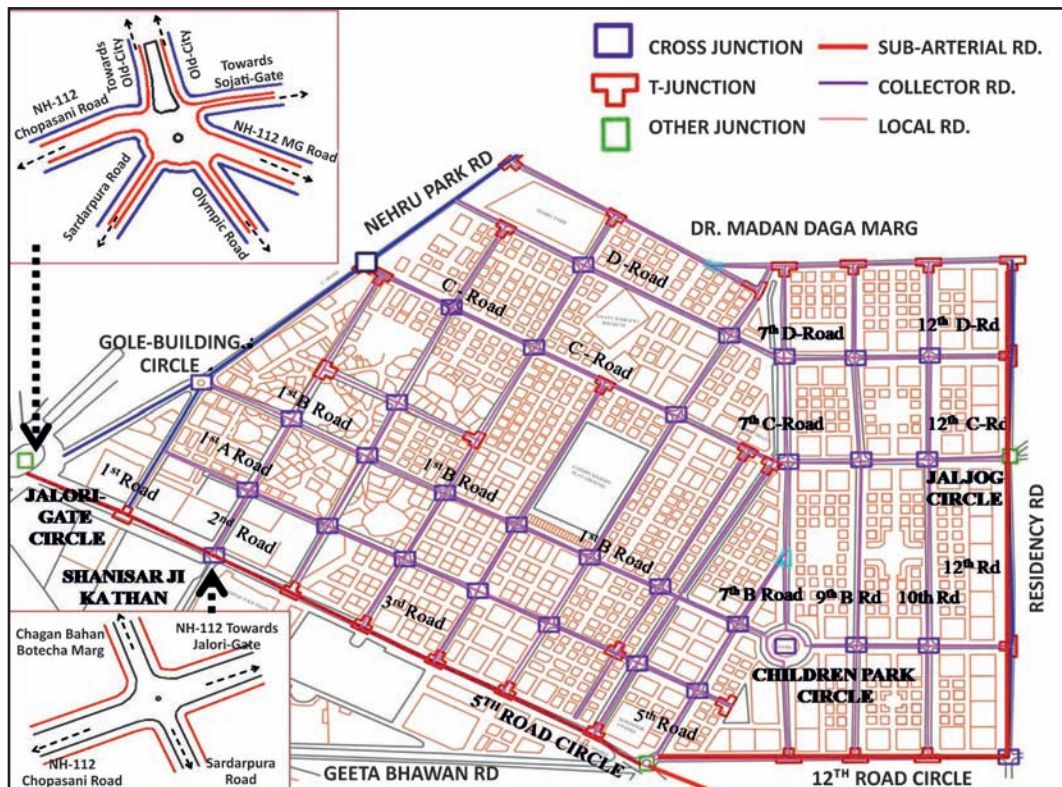
Source: Author

Fig. 7: Existing Landuse Distribution along the Sardarpura Roads

Source: Author

figure shows, Sardarpura D road have large percentage of residential units and lesser commercial units while B road has existence of so many commercial units.

4.2 Road Reserve

Design elements also include multiple points of visitor's access to the street network. Each segment of the street network determines the limitations of street design by defining the width of the street (Draft Austin street design guide, June 2017, pp 5-10). Jodhpur road network forms a vital link connecting communities with goods, services and different activities. As Sardarpura circulation layout plan shows that all roads are not the same. That is because we need different roads for different purposes. In this community various types of roads are identified as Sub-arterial, collector and local roads. Sub-arterial and arterial roads are the major connecting roads across Jodhpur. They include highways, and motorways. On an average day, they handle large volumes of vehicles. Pedestrians are allowed to cross only at intersections. Collector roads are the roads that connect communities to the major sub-arterial and arterial roads in Jodhpur. These are meant for collecting traffic from local streets to arterial streets. Typically, they allow for the transport of goods and the like, to major highways for transport to markets.

Local roads are largely the neighborhood street system. Does not carry large volume of traffic which means these roads are relatively free of through traffic

and mostly handle local traffic. The challenge in these areas is to provide a high level of safety and adequate access facilities because these streets are changing their functional character due to high level change in land use patterns are occurring speedy which invites lots of traffic.

As per space standards for urban roads Collector Street should have minimum 20-30 meters and local streets 10-20 meters reserve space (UDPFI Guidelines prepared by ITPI, New Delhi). According to the site plan reservation of space for urban roads are as per norms, collector streets are 60 and 80 feet wide and local streets are 40 feet wide but modern development trends have seen an increase in proposals that include private encroachments into public spaces. Besides the loss of public space, these private encroachments can pose problems such as street obstructions and long term safety risks.

One diagrammatic analysis (Imagery October 2015 and CNES Astrium 2015, Google earth platform) of road width deduction given below it explains the correlation of road width and traffic speed, as the width of the lane increased, the speed on the roadway increased (Fig. 8 and 9). As per plan proposed width of B- road is 18 meters and it is only exists near children's park on ground first two plots of both sides are maintain proposed width after that only 4.5 m one side and 9.5 m another side left for road purposes, that means 4 m of road space have been covered with built up area (Fig. 8). Same as another graph shows C road fails to conserve proposed width. Traffic speed graphical analysis shows without

Fig. 8: Encroachments and Width Deduction of Sardarpura B and C Commercialized Roads
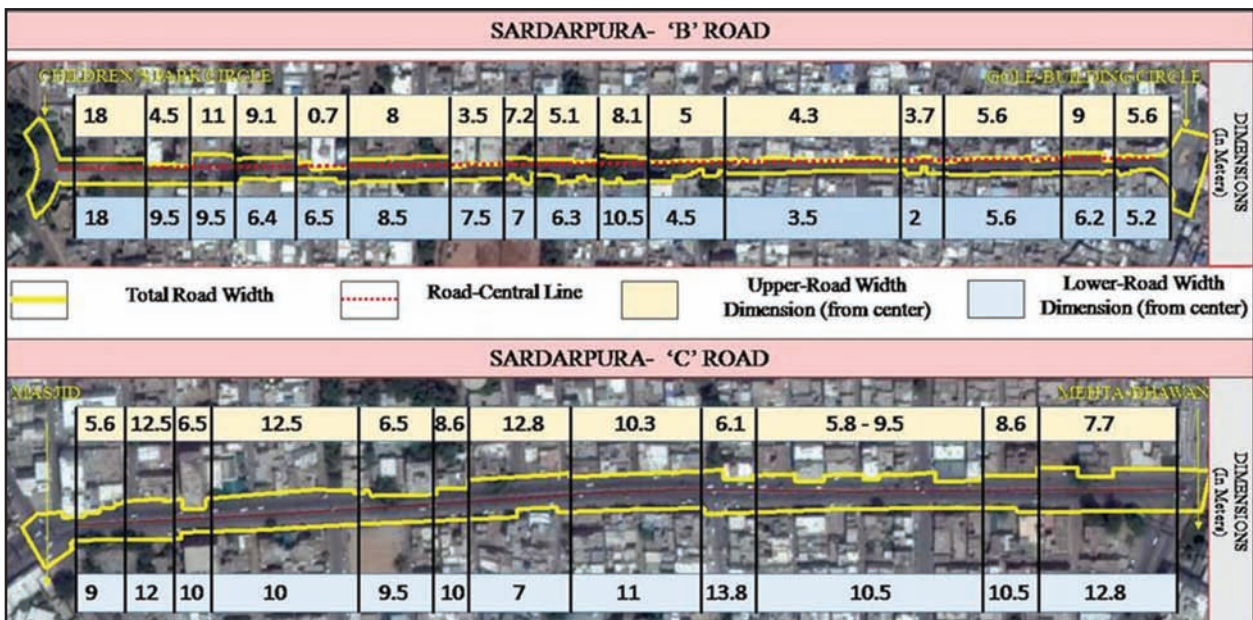
Source: Author

Fig. 9: **Road Width and Traffic Speed Graphical Analysis of Sardarpura B and C Commercialized Roads**
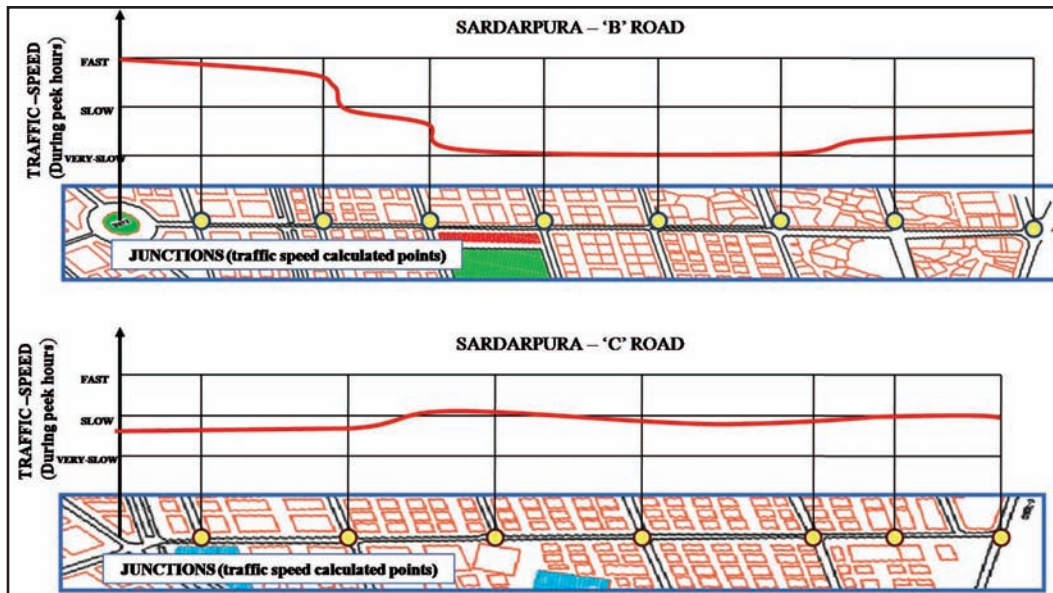
Source: Author

adequate road width or bottlenecks and street obstructions at various places vehicular speed decreases (Fig. 8).

The effect of road width on driver speed choice seems to depend on the amount of pavement the driver perceives as usable. This is affected by the lane width, number of lanes, shoulder width, presence of parked cars on the road edge, and

Fig. 10: Extra Cover Area of Road Space by Private Developer

Source: Satellite Image and Approved Layout Plan

presence of vertical elements on the roadside. Wide lanes increase the area of road available to drive on (Elliot et al, 2003). Removing roadside encroachments and widening the shoulder creates more perceived space for drivers, while the presence of parked cars on road edges reduces the area available for continuous driving without maneuvering around obstacles.

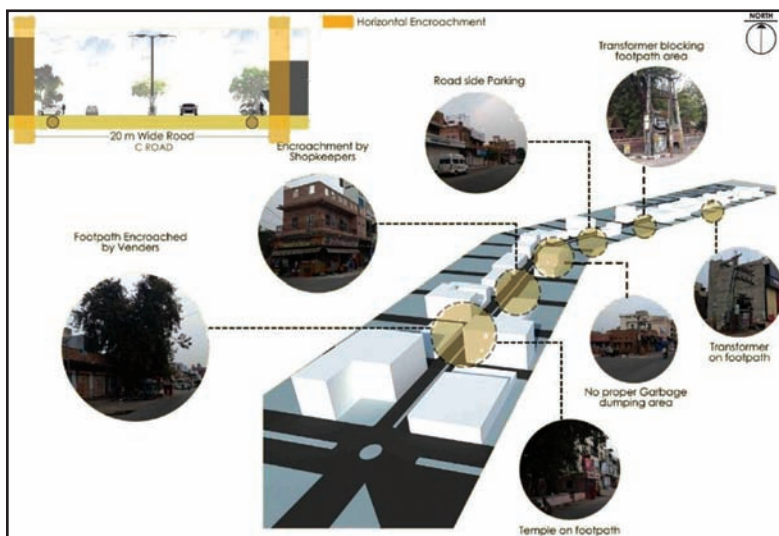**Fig. 11: B Road Street Cross - Section and Street View with Some Issues**
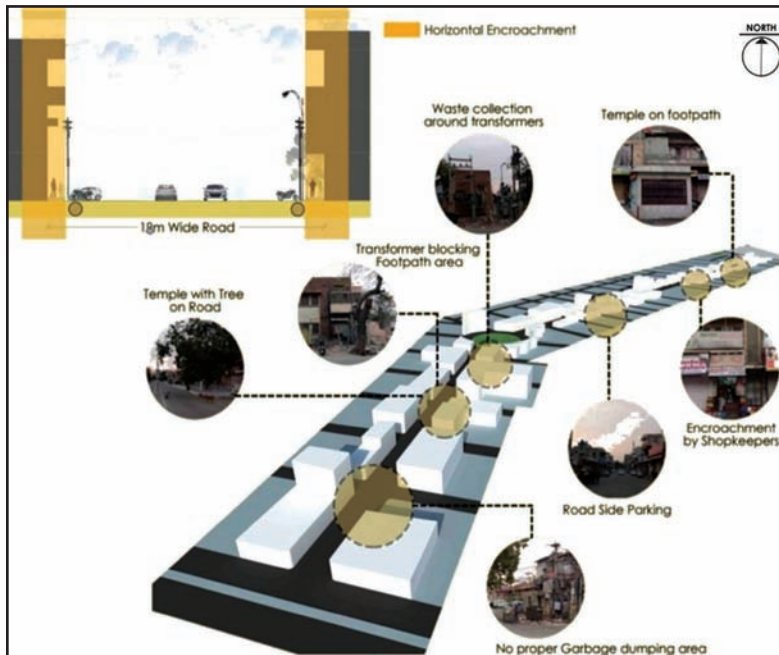
Fig. 12: C Road Street Cross - Section and Street View with Some Issues

Another single plot (plot no. 477) example is taken from Satsang Bhawan road where 333.6 sq. yard plot was proposed and at present it covered 476 sq. yard area on ground that means extra built up increased which is private encroachment on open land (Fig. 10).

4.2.1 Street cross section

The necessary right-of-way (ROW) width is the summation of all cross section elements: utility accommodations, clear zones, drainage ditches, sidewalks, buffer strips, curbs, shoulders and bicycle lanes, motor vehicle travel lanes, and medians. It is the width of land acquired for the road, along its alignment. It should be adequate to accommodate all the cross-sectional elements of the Road and may reasonably provide for future development.

Pedestrians, bicycles, and vehicles, are accommodated in one shared travel lane, as illustrated in Fig. 11 and 12. Usually this condition occurs when there is low user demand and speeds are very low, or when severe constraints limit the feasibility of providing shoulders, but in the case of

study area existing conditions are distinct where user demand and speeds needs to be high and where wide lane space is available.

Provision of sidewalk or footpaths is missing from the site especially on these highly commercialized B and C roads. Streets are designed from the center line outward, with priority given to motorized vehicles. Whatever space is left over after creating the carriageway and parking is designated as the footpath. The placement of utility boxes, trees, and light poles on the footpath leaves no clear space

Fig. 13: Major Activity Nodes of Site

Source: Author

for pedestrian movement. The wall to wall carriageway on these streets is in commercialized area sends a signal to pedestrian that they are not welcome. As per UDPFI guidelines the minimum width of footpaths should be 1.5 m or 4.9 feet. The width should be increased by 1 m (3.28 feet) in business or shopping areas to allow for dead width. Footpaths adjoining shopping frontage should be at least 3.5 m and a minimum of 4.5 m is desirable adjoining longer shopping frontages.

4.3   Intersection Control

Variety of shapes and sizes of roundabouts exists on sub arterial road of the site, these activity nodes are known as 12th road circle, Jalori gate circle, Medical circle, Jaljog circle, 5th road circle and Shanisar ji thaan circle. These locations are shown in Fig. 13. The circulation system of the site area is grid based so numbers of alternative intersections are identified as cross and T junction forms.

Jalori gate junction is seven, 5th road circle is six, Jaljog circle is five and 12th road, Shanisar ji thaan, medical circle are four armed junctions (Fig. 14). Most of them are not signalized and irregular in shapes which restricted view of the entire intersection. In case of Jalori gate junction the traffic rotary is more which causes poor sight distance. Although it is one of the major junction in the city with major commercial activities, facilities and residential settlement and it is not only attracting traffic but also high volume of pedestrian have been recorded here but this pedestrian intensive area exists without adequate provisions and management. Rotary details and obstructions of the junction described below.
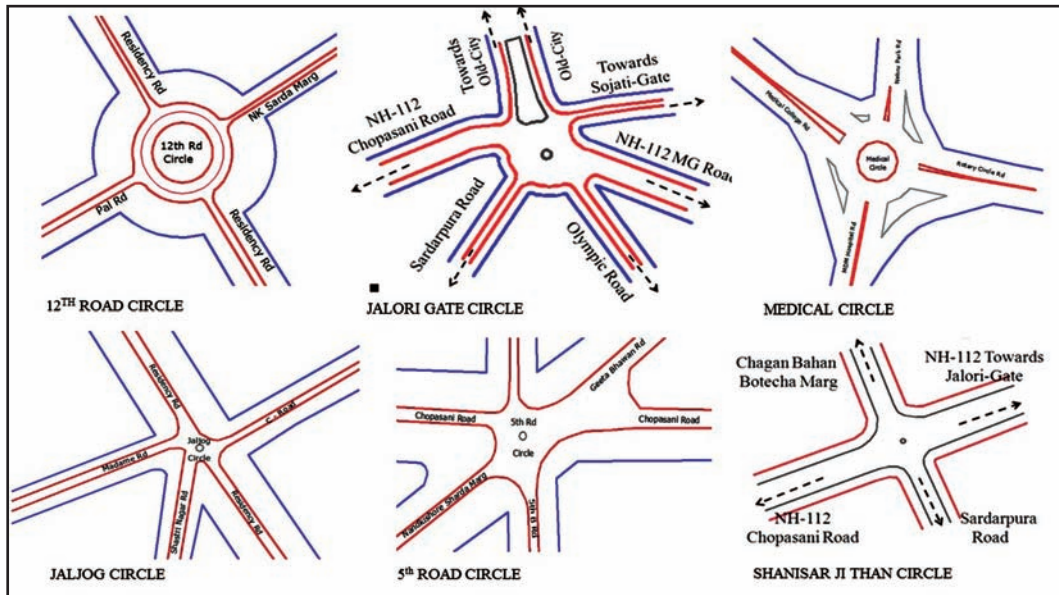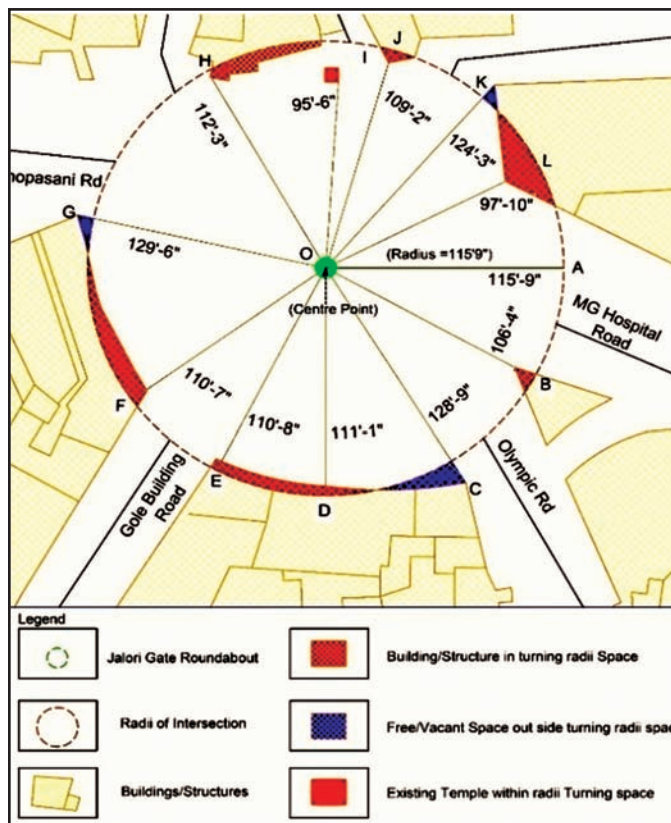
Fig. 14: Sketches of Intersection Designs of the Site

Source: Author

Fig. 15: Rotary Details of Jalori Gate junction

Source: Author

4.3.1 Radius and Turning Radii of Jalori gate Junction and Roadside development

Circumference of Inscribed circle is 727'-3" with an area of 4676.8 sq. yds. The radius of circle is 115'9" (Fig. 15). Although Structures are designed on the periphery of inscribed circle but due to design implementation mistakes and absence of designated space for various road users essential functions spill-over into the carriageway or pedestrian walk way. Some area developed under the circumference of inscribe circle while some area became vacant. That is why drawn distances show variations which should be same from the centre.

As illustrated Fig. 16 Curb extensions are missing from this junction which is often applied at the mouth of an intersection. Curb extensions increase the overall visibility of pedestrians by aligning them with the parking lane

Fig. 16: Correlation of Wider Travel Lanes with Higher Vehicle Speeds
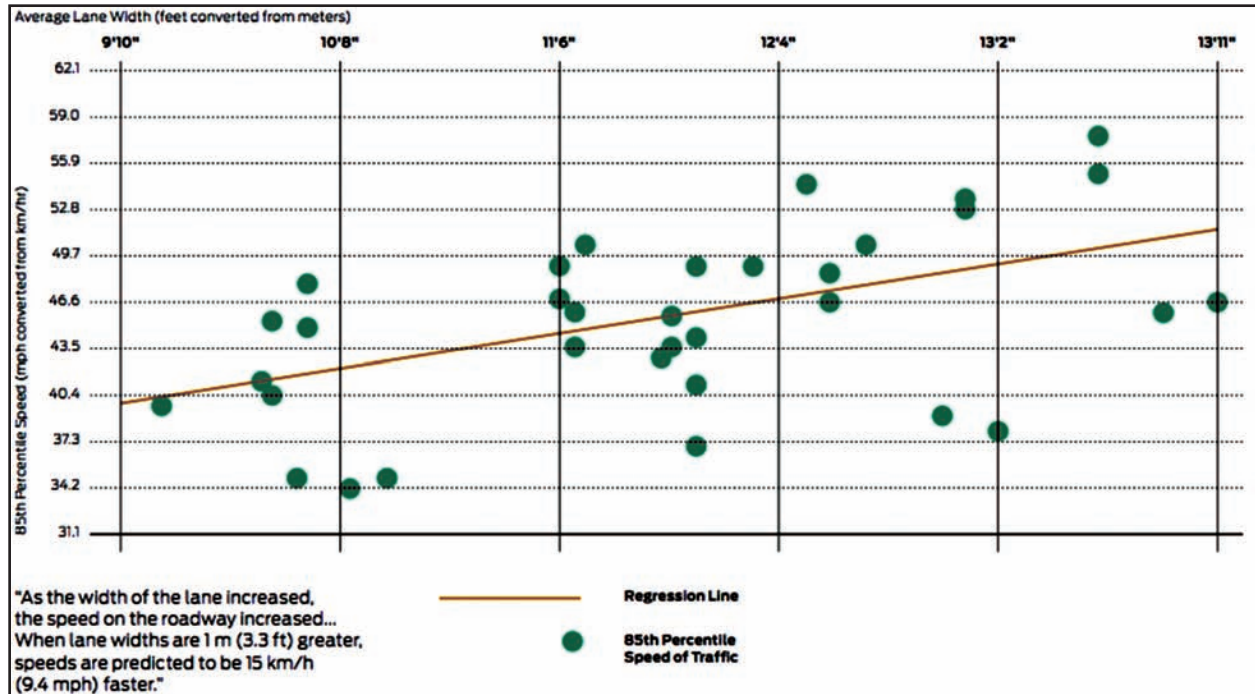
Source: Design factors that affect Driver speed-Fitzpatrick, Kay, Paul Carlson

and reducing the crossing distance for pedestrians, creating more time for preferential treatments such as leading pedestrian interval and transit signal priority one. Jalori gate Junction needs improvements with missing design elements.

5. RESULTS AND DISCUSSION

Most of land conversion is for commercial purposes there is now a lot of vehicular traffic from the neighboring and peripheral sites which have strong daily interaction with the unit. Consequently, the well-defined planned hierarchy of roads has been disturbed.

All streets, including sub arterial, collector, and local streets have an important role in the urban structure. They contribute to community livability by providing accessibility and by supporting active land uses on both sides. The emphasis is given in this study upon connectivity, amenity and integration to achieve safe and attractive street networks.

Street design decides the dynamics and form of the city. Pedestrian sidewalks and crossing, non-motorized vehicles, utilities, motorized private vehicles, public space, public toilets, shaded bus stops and trees are essential components of

SWOT Analysis

Strength	Weakness	Opportunity	Threat/Challenges
Grid iron planning	High density	Increment in revenue generation.	Overcrowding area
Ease of access.	Lack of Infrastructure facilities and parking space.	Providing convenient access to shopping places for residents as well as commuters.	Increasing encroachment
	Increment in commercial spaces can make it highly developed area.		

all streets but in case of study area these are inadequate and highly encroached streets are just restricted to metallic roads for motorized vehicles transporting goods from one place to another and streets are losing their multi – functionality as public space. No clear walkway makes Confusion Zone at many places of site. There is also need to recognize the impact of intersection control type on space requirements and built form.

Road space is encroached highly by placing formal and informal land uses on roads. Some of the regular shops of the area have also extended their shops and display their items on the road. With little space for commuting, there is a virtual chaos and regular traffic jams have become the common feature of this area. Wider sidewalks are desirable where there are high pedestrian volumes and where there is no buffer between high speed and high volume roadways. Fig. 16 shows correlation results of road width and traffic speed, as the width of the lane increased, the speed on the roadway increased.

Due to the strong correlation between transportation planning and land use planning, land use policy should be closely reviewed and monitored in terms of its impacts on the road network and its functional classification. Concerning authorities should work towards integrating existing land use plans, land use ordinances, and transportation and circulation planning. This will reduce potential conflicts between land uses and the capacity and function of the abutting roadway.

Authorities should review zoning district regulations, as they relate to roadway access, mobility and capacity. The potential effect of existing zoning ordinances on traffic conditions and their road functions should be evaluated. Identify and adopt the preferred design standards for each class of roads. Establish a classification of roads, based on their function. Local roads should be further classified, at local authority level, to reflect their various functions and impacts on land use.

The design of the road network should be directly related to the function of that network and should be directly implemented through land use regulations. This is an important consideration because the function of a road dictates specific requirements, such as the necessary amount of right of way, design speeds, and number of lanes. In effect, the function of the road must be established and preserved through such land use controls as zoning and subdivision and land development ordinances.

Existing corridor plans, should continue to be updated to assess impacts of land uses, growth trends and projections, and recommended functional classification of roadways. Roadside encroachments should be removed and develop pedestrian pavements and framed by a single row of trees on one or both sides of the streets depending on space availability and visibility requirements. Discourage interruption of street grid system in future developments and Conduct detailed study to address the possible impacts of the B and C commercial streets. Develop detailed roads as well as junctions design specifications for improvements to the pedestrian system. The scope of the design specifications should include sidewalk design, infrastructure improvements and landscape. Complete street policy needs to be adopted which includes the recognition that streets contribute to the quality of life and the economic vitality of places and are meant to serve all users.

Analyze alternatives to enhance pedestrian connectivity across the site, including feasibility of constructing a pedestrian bridge at Jalori gate Junction. Any construction raised in the proposed or apparent width of roads, must be removed by local authorities to maintain its hierarchy and proposed width as per the norms laid down must be restored for better accessibility to all road users. The building bye-laws of the local authorities should be enforced strictly. Residential or commercial multi storey buildings are granted, a person should be bound down to provide parking space and the construction of the building should not be permitted to be proceed with unless the requirement of parking place is satisfied. This method will helpful to remove extra vehicular burden on roadsides. To minimize conflicts and provide for anticipated traffic movements each intersection must be evaluated with regard to its individual characteristics.

Grade separation, signal activation, road marking, signage and beautification of the intersection need to be improve for smooth moving of traffic. To avoid the delays at the junction's adequate traffic management measures such as turn restrictions, redirect or restrict traffic flows should be implemented. The elements that make up city streets, from sidewalks to travel lanes to transit stops, all vie for space within a limited right of way. Transportation planners and engineers can use this toolbox to optimize the benefits the community receives from its streets. The enhancement or buffer zone is the space immediately next to the sidewalk that may consist of a variety of different elements. These

include curb extensions, parklets, storm water management features, parking, bike racks, bike share stations, and curbside bike lanes or cycle tracks.

6.   CONCLUSIONS

Sardarpura urban unit of the city is having strong development pressure as a lot alteration has happened in the land use pattern that has evolved. This assessment has been prepared to provide a detailed evaluation of transportation circulation conditions. It also recognizes that there won't always be enough space to include all of the optimum design features and encourages users to reference existing mode plans to assists in prioritizing these features. Vertical and horizontal clearances for visitors are destructed at many places. As per survey records it was observed that existing land development characteristics are encouraging pedestrian activity but roads and junctions are inefficient to provide sporting infrastructure due to encroachment, unauthorized developments etc. Intersection control choice requires consideration of all potential users of the facility, including drivers, passengers and pedestrians. To avoid congestion and to provide easy access at the junctions as well as on commercial streets adequate planning and design along with specific traffic management strategies should be implemented.

REFERENCES

Austin Transportation Department (2017) Draft Austin Street Design Guide, Austin Transportation Department, pp 5-10.

Finnish Transport Agency (2010) *Road Traffic Management Strategy*, Helsinki, pp-6.

Jessica Edquist, Christina M. Rudin-brown, Michael G. Lenne (2009) *Road Design Factors and their Interactions with Speed and Speed Limits*, Pp. 6-8.0732623685.

Mass Highway, January 2006 edition, Cross Section and Roadside Elements. Pp. 5-10.

Ministry of Urban Development Government of India (2014) *National Urban Transport Policy*, pp 21-25.

National Association of City Transportation Officials (2018) *Urban Street Design Guide*.

Tater, A. (2017) 'Accessibility to Transport Facility: A Case Study of Jodhpur, Rajasthan', in Sharma P. and Rajput S. (eds.) *Sustainable Smart Cities in India*, The Urban Book Series, Springer, Cham, pp 577-602. ISBN 9783319471440.

Todd, L. (2017) *Evaluating accessibility for transportation planning,* Victoria Planning Policy Institute, pp-32.

UN-Habitat (2014) *A New Strategy of Sustainable Neighborhood Planning: Five principles*, Urban Planning Discussion Note 3 (May 27, 2014) UN- Habitat (United Nations Human Settlements Programme) Urban Planning and Design Branch, p 3-7.

Western Australian Planning Commission (2000*) Street Layout, Design and Traffic Management Guidelines,* Western Australian Planning Commission, p 5-30. ISBN-0730991555.

Wilbur Smith Associates (2008) Final Report: Study on traffic and transportation policies and strategies in urban area in India, pp- 38.

Wilbur Smith Associates (2010) *Draft Final Report on Comprehensive Mobility Plan for Jodhpur*, p 46-56.

Urban Neighborhoods and Walkable Mobility:
An Overview of Planning and Design Principles

Dakshayini R. Patil and Mamatha P. Raj, Ph.D.

Abstract

Neighborhoods are primary components in towns and cities while urban spaces are its lifelines. People are the main elements, which make such spaces in neighborhoods successful. Making residential neighborhoods pedestrian friendly is a step towards achieving sustainable urban development. Planning and design principles have evolved over ages with specific objectives to resolve concerns of the times. This paper attempts to provide an overview of such principles and models of growth of towns and cities as implemented in the case studies by understanding the salient features of design aimed at people inclusive perspectives. While most theories emphasize shared space ideologies, others are empathetic to the upper tiers of the transportation pyramid-walking, bicycling and public transit. Understanding these similar ideologies from around the world shall deduce critical aspects of planning and design elements implemented as a ready reckoner matrix for further decision and policy making.

1.   INTRODUCTION

This paper is based on a study undertaken for a doctoral research project based on pedestrian-mobility enhanced neighborhoods for all age groups, specifically elderly in Indian towns and cities.

Cities and towns are a collage of different neighborhoods, each defined by various parameters based on political boundaries or physical and socio-cultural characters. They may overlap each other and depend on each other for amenities or recreation. They are composed of citizens of diverse nature, age, background, social or physical traits. Neighborhoods may be designed formally by planners or may have grown and spread organically over time. Indian towns were originally compact and designed for people on foot. With the advent of automobile and urbanization, towns became averse to pedestrian mobility, resulting in unsustainable scenarios and impacting walkability. Recently there has been a paradigm shift to reintroduce and reclaim urban spaces in cities that are conducive to walking for a citizen to carry out needs and errands on foot or by public transit.

2.   RESEARCH FRAMING

This research began with a broad intent to achieve sustainable towns and cities where residential neighborhoods are essentially adapted to people on foot.

Dakshayini R. Patil, Associate Professor and Doctoral research scholar, BMS College of Architecture, Bangalore, Email: dsjoshi08@gmail.com

Mamatha P. Raj, Ph.D., Professor and Director, BMS College of Architecture, Bangalore, Email: director.bmsarch@gmail.com

Walkability enhancement to aid inclusiveness at all levels of pedestrians may be achieved with efficient tools at the level of planning strategy.

Hence, the study aims to achieve inclusiveness of all citizens in the urban spaces by way of planning and designing walkable neighborhoods. There are two distinct ideologies. One, where spaces are exclusive for people and other, where both people and motors co-exist in urban spaces. In the Indian context it is seen that urban spaces are arenas of multiple components, people share the space with many elements such as motors, infrastructure and various activities. In the planning and design of towns and cities, street networks and urban space networks are primarily based on motor traffic while pedestrians remain secondary. Hence, the objectives are essentially to evaluate neighborhood planning and design concepts in terms of walkable mobility typologies and debate on the ideology of shared space in urban areas. The methodology involves identifying various concepts of neighborhood planning and design as implied in the case studies. Salient aspects of each concept with relevant implications on the said objectives are listed in a tabulated matrix.

There have been two schools of thoughts for city planning and design ideologies - motor based planning and integrated planning (motors and pedestrians). Whilst both proponents have their points of view, master planning process of cities have never been entirely pedestrian based. Pedestrians and motors vie for prominence especially in residential neighborhoods; hence to award efficient walkable environments to all residents is essential in a sustainable set up. To achieve this, it does not just suffice to design aesthetically pleasing streets and sidewalks, but planning principles need to be addressed hierarchically from larger neighborhood scale to the elementary street layout.

3. PLANNING AND DESIGN CONCEPTS

Cities and neighborhoods have evolved over time and with specific concepts that each city adhered to as a planning principle. Planners and designers propagated such principles based on existing scenarios and impending issues at the given point of time. An over-view of popular and significant concepts has been studied and the salient features are outlined as brief take-away from the conceptions (Table 1). The concepts focus on different elements and scales of neighborhood design with the larger intention of walkable communities. From the larger scale of land use planning, network of public spaces to provisions of street signage for creating better citizen-friendly places are noted in the matrix. Interesting and innovative concepts for bike lanes, pedestrian infrastructure, civic works and similar issues as solutions become resourceful.

Table 1: Concepts in Planning and Design to Sustain Walkable Neighborhoods

SN	Concept and Example	Salient Features		
1	Neighborhood Concept- Radburn	• Major arterials roads only on periphery • Interior street patterns designed for reduced traffic volume and speed	• School as centre • ¼ mile as walking radius from a child's point of walking capacity	• Shopping zone along periphery to exclude non-local traffic within residential neighborhood
2	Legible City [1]- Bristol city	• Interconnected parts • Highlighted landmarks for better legibility • Identity to urban areas	• Legible signage for improved way finding • Pedestrian information panels with maps installed strategically	• Reinforced public transport network • Maps for pedestrian paths displayed/ distributed • Art installations
3	Twenty-Minute Neighborhoods [2]- • City of Eugene • Portland	• Residential density defined • A logical mix of residential and commercial uses within walkable ranges	• A walkable environment • Building scales that are comfortable for pedestrians • Accessible design	• Enriches social interaction • Amenities network • Distinct & identifiable centres/public spaces
4	Multi-Generational Planning [3]- USA	• Strives to make cities and neighborhoods accessible, safe, and inclusive for children, youth, families, adults, and the elderly	• Allows people to age in place, in their homes or neighborhoods • Promotes civic participation by older & younger generations	• Applies universal design principles. • Tackles the common and specific concerns of each age group
5	Traditional Neighborhood Design (TND) [4]- Atlanta	• Transit-oriented, pedestrian-friendly and senior-friendly concepts • Make multiple destinations more accessible to pedestrians	• Sidewalks & streets with clear crossings, slower traffic, hence is safer and easier for elderly, children and people with disabilities	• Locate residences closer to the street to increase safety • Create public spaces convenient for social interaction
6	Universal Design (UD) [5]- Dale Avenue	• Spaces that are adaptable to various uses, flexible to user manipulations and nature	• Easily usable spaces and facilities • Legible & informative • Designing spaces for inclusive nature to all user groups	• 'Aging in place' concept • Compact built and block sizes for quick easy navigation
7	Smart Growth - Arlington County, VA	• Mixed use development • Retail commercial in lower levels • Encourages pedestrian friendly public spaces • Parking avoided in valuable public zones	• Optimum density • Incentives to developers to dedicate part of their projects to house amenities for larger public	• Infill Development • Making connectivity to various landmarks easier • Alternative travel modes made easier as well

While neighborhood design addresses primary planning strategies and ideologies, there are parallels under the ambit of secondary level of street layout planning as well. Streets with their sidewalks are the last elements in the walkability design. Streets are arenas of multiple components and diverse functions. Street design in terms of layout (network), hierarchy, sidewalks, crossings, aesthetics, motor and pedestrian infrastructure are critical elements of design. There are concepts which have attempted to involve all or most of these elements of design to host all types of traffic movement amicably. 'Complete streets' and 'Woonerf' have evolved as planning approach to cater to all users and modes of transportation (Table 2). Better streets, Living streets, High streets and Green

Table 2:   'Complete Street' Concepts

SN	Complete Streets Example	Salient Features		
1	102 Street [6]- Grand Prairie Canada	• Wider sidewalks • Enhanced crosswalks with colored paving • Planted medians • Pedestrian bulb-outs at intersections	• Reduced traffic lanes • Enhanced transit stops with shelters	• Painted bike lanes on both sides of the street
3	Laurier Street at Elgin Street, Ottawa Canada	• Attractive yield sign to motorists • Encourage passage to pedestrians and cyclists	• Designated zones for parking and stop-over • Public transport nodes enhanced with attractive features	• Attractive signage for other message as well, painted with uniform colours
4	King Street West N2G Kitchener, Canada	• Kerb height minimal • Sidewalks made wider for better walkability • Cycle docking stations to improve ridership	• Planting of new trees • Storm water management with provisions such as planter zones	• Bollards to bifurcate on street parking • Street lighting network and street furniture
5	Residential Complete Street- Logan Ave at Withrow Ave, Toronto	• Woonerf, or living street design • Human interaction to facilitate motor & pedestrian traffic • Motors and pedestrians both work together	• Frontages host plantings and seating as a continuum of public space • Good social places for recreation	• Walking environment made attractive and comfortable with interesting elements in public space
6	Woonerf [7]- • Dutch city of Delft • Appleton Street in Boston	• Street as a social space, pedestrians have priority over cars. • Street shared among pedestrians, bicyclists, and motor vehicles • A sense of place	• Enabling the elderly and others with limited mobility to have better access and mobility within their own street environment.	• Designing streets and elements that impose lower speed limits in order reduce accidents in residential zones
7	Separated Bikeways- Assiniboine Avenue Winnipeg Canada	• City's first separated bikeway • Number of cyclists increased by 65%	• Pedestrian infrastructure including detectable pavers	• Curb bump-outs to shorten pedestrian crossings.

streets are some of the prominent concepts with specific principles of design (Table 3). A comprehensive system is yet to evolve in Indian context. Hence, an understanding of the concepts already in place through case studies and best practices gives an overview to gain insights into practical solutions or open debate on design features implemented.

Table 3: Planning and Design Concepts for Streets

SN	Concept and example	Salient features		
1	Better Streets - San Francisco Leland Avenue	• Corner bulb-outs • Informal seat walls • Colored, textured paving treatments to highlight pedestrian crosswalks • Roadway/ pedestrian lighting	• Bio retention planters to infiltrate and detain storm water • New street trees	• A 'gateway' plaza designed at Bayshore Boulevard • Introduction of elements such as public sculpture & seating
2	Open Streets [8]- • Seattle • Philadelphia • Chicago • Minneapolis	• Promotes walking through temporarily transforming streets only for people for any fun activity such as cycling, playing	• Called as 'Ciclovias', objective is to give back streets to people	• A tie-up of government & private agencies or businesses to advocate awareness
3	Living Streets- Malmö, Sweden	• Street designed primarily for pedestrians and cyclists • Aims to reduce both the speed and dominance of motorized transport.	• A social space where people can meet and where children may also be able to play legally and safely	• Street is set up so that a car cannot drive in a straight line for significant distances, for example placing planters at the edge of the street
4	High Streets (main streets) [9]- Stratford Road, Birmingham	• Major traffic routes and community focus as well • These are prime shopping zones	• Thoroughfares with significant retail in large villages and towns	• Every neighborhood may have its own such street
5	Green Streets [10]- NYC	• Converting paved, vacant traffic islands & medians into landscaped zones giving green respite to eyes	• Have the potential to improve health • Encourages walking behavior • Aesthetic enhancement	• The concept created a Bronx intersection from a dead space to an attractive green zone
6	Cidade Activa (Active Streets)- Brazil	• Aims to create healthier city • It takes a broad range of expertise to plan an active, healthy city • Public health, architecture, design, and urban planning.	• To understand how people, move throughout Brazil's cities • Developments will prompt people into new patterns of movement.	• Lectures & training sessions to help people understand how urban environment can have impact on their attitudes & actions.

Streets may be designed not just as traffic spines but avenues for other public activities in an amicable manner; value adding to the public realm in general. They could be defined to be unique shopping districts or host plazas for public recreation. Cyclists and pedestrians may be prime users and spaces designed exclusively for foot-traffic. This induces confidence amongst pedestrians in terms of safety and comfort, while encouraging walking and increasing public transit ridership in the city. 'Open streets' and 'Active streets' initiate re-reclaiming and reminding that streets are people's spaces; cities such as Gurgaon have seen these introduced as *Raahgiri day* by WRI and partners, being feebly successful though. Elements of landscape integrated to aid efficient storm water management as in 'Better streets' and 'Green streets' concepts enhance sustainable objectives as well. The past Governor of Bogota E. Penelosa was successful in enhancing his city's public realm by giving the ownership of streets and public spaces back to people and children. A partnership between government and private agencies or citizen groups has been used in creating awareness to address public space design with participative approach.

There are certain other concepts which are regulatory in their objective. Sample road diet is a means of controlling and limiting the road sizes whilst adding features of pedestrian infrastructure such as wide sidewalks and landscape aesthetics. A concern seen in urban areas is constant civic works or repairs, developmental works such as metro-rail works and building activities which add to the commuter chaos; debris along streets adding to pedestrian woes of falls, injuries, accidents or discomfort. Hence, a regulation that directs civic bodies and citizens to abide by a set of norms to carry out such activities is needed so as not to hinder pedestrian mobility, followed by a strict compliance monitoring is essential. Another concern is that cities have many unused or under utilized spaces that become dead spaces hosting debris dumping, garbage collection points, haven for stray animal or encroached by beggars and hawkers. San Francisco applied the concept of 'pavements to parks' to convert and utilized such unused spaces as pocket parks or small landscape zones for pedestrian utility. Such concepts give good direction towards unique ways of dealing with impending urban issues (Table 4).

4. SHARED SPACE IDEOLOGY IN URBAN DESIGN

Shared space indicates ideologies where people and motors share the urban space with equal rights-of-way and no segregation between them. (Table 5) The aim of shared space principles is to create an environment to improve road safety by negotiations between users; induce responsible attitudes amongst drivers. But there are aspects of criticism with under-privileged user groups such as physically challenged, elderly or children.

Table 4:   Regulatory Concepts for Streets and Urban Spaces

SN	Concept and Example	Salient Features		
1	Sample Road Diet - 102 Street Grand Prairie Canada	• To put a road on a "diet". • Reduce physical size of road by reducing drive aisle widths & number of lanes	• Widening the sidewalks • Adding a boulevard down the centre of the road	• Introducing other traffic calming measures.
2	Routine Accommodation [11]- Hamilton	• A process to address pedestrian mobility plan when streets are reconstructed for infrastructure repair, replacement or upgrades and civic street scape improvements	• Recreate a pedestrian environment that is safer, more interesting thereby enabling many more functional pedestrian trips for shopping, work or civic life	• Is the process where changes to improve pedestrian street scapes utilize a range of solutions on each project
3	'Pavement to Parks' [12]- San Francisco	• Creation of small parks in under utilized public zones • Called as 'parklets'	• Citizens are permitted to convert their vehicle parking lot into a parklet	• Conversion of certain intersections to plazas or parks

Table 5:   Salient Features of the 'Shared Space' Concept

SN	Concept and example	Salient features		
1	Courtesy crossings [13] Chester, England	Replacing formal pedestrian crossings	Motorists and pedestrians respect each other	Design elements such as bollards warns drivers about the crossing
2	Shared Space De Kaden, Drachten	Street became a public space adorned with trees and street furniture	• Open for all traffic over the large paved space • Few corners excluded from motors by bollards	• No pavement, height difference or bike paths • Pedestrians & traffic co-exist with street side cafés and shops
3	Interact, Communicate, Negotiate Laweplein	Creation of interesting street scapes	Good eye contact and gestures	Traffic must be slowed down
4	Easy Riding Laweplein	No separation between cyclists and pedestrians	Paving of brick for paths	
5	Kerb-free zones	Footpath and street at same grade	Edge is just a minor detail, but such as drain detail or landscape	Landscape as median

6	Shared space Laweplein Squareabout	The Junction was redesigned as a public space, aesthetically enhanced with landscaped plants, fountain and lawn	• Modulation of height of fountain as per increase in vehicular traffic • A mound was introduced in the roundabout to allow for a glimpse to the motorists	'Courtesy crossings' were resorted to in place of traffic lights or signals indicating a 'place for all'
SN	**Concept and example**	**Salient Features**		
7	Shared space Exhibition Road, West London (Reconstruction 1)	Footpaths and street at same level and similar surface paving	• Traffic free zones introduced • Pedestrian space increased • Low speed limits • Street furniture such as benches	• Innovative lighting design • Designated waiting space for walkers • Reduced speed removes the feeling of 'I own the road' by motorists
8	Shared space Exhibition Road, West London (Reconstruction 2)	• Eased pedestrians crossing due to low motor speeds • Restricted street side parking	An innovative drain cover using black cast iron channel on either side of the road, giving a unique subtle demarcation	For the visually challenged, a tactile paving to avoid entering onto vehicular zone

Table 6: Positives and Negatives of Shared Space Ideology

Positives	Negatives
Vehicle drivers display more careful and watchful attitude	May prove risky to pedestrians
Reduced motorized ROW	Occurrence of accidents
Same street space designed for pedestrian comfort as well as vehicle accommodation	Requires judgement while maneuvering
Reduced vehicle speeds conducive to pedestrians	Drivers getting impatient due to reduced speed and skill to navigate through planters, dividers or so
Proximity of vehicles to residences or shops	Difficult for elderly and children to cross due to absence of dedicated pedestrian space and crossings
Active streets- Natural surveillance	Bottlenecks and vehicle congestion possible
-	Pollution from vehicles- noise, air unavoidable
-	Unsightly with cars everywhere
-	May add to clutter of spaces, encroachment and hindrance to pedestrian movement

5. CONCLUSIONS

The case studies reveal the way urban public spaces are modulated for people to share these spaces with motors by using techniques such as courtesy

crossings and kerb free zones and concepts such as Woonerf. This may resolve many a planning dilemma, but certain concerns arise on safety of pedestrians and the resultant activity patterns in urban spaces such as encroachment by hawkers, chaos along sidewalks and crossings, which become unfriendly to the elderly. There is no clear right of way for the pedestrian and at times other uses may become over bearing (Table 6). The negatives seem overbearing and impactful on pedestrians; shared concept becomes critical especially in the Indian context with multiple and diverse uses and user groups in public spaces. Whereas, concepts such as Sample Diet, which puts roads on a 'diet' of vehicles reveal ideology of increasing space allocated for pedestrian mobility. Complete streets explain the instance of shared spaces while emphasizing pedestrian realms. Understanding these shifts helps in addressing issues pertaining to pedestrian mobility with various perspectives. They indicate elements of design and steps taken for making neighborhoods walking friendly for the people.

REFERENCES

Center for Active Design (2010) *Active design guidelines- promoting physical activity and health in design*, Center for Active Design, New York.

Dize, V. and Jenakovich, M. (2013) *Elder Pedestrian Safety in Miami-Dade: An Overview*, NCST and AFA http://www.sfbetterstreets.org/

http://www.bristollegiblecity.info/

http://www.portlandonline.com/portlandplan

http://www.planning.org

http://www.ncsu.edu/ncsu/design/cud/about_ud/udincommunity.html

Applying Universal Design in Communities, (2006) Thomas Jefferson Planning District

http://completestreetsforcanada.ca/what-are-complete-streets

Natalia, C. (2012) *The Woonerf Concept "Rethinking a Residential Street in Somerville*, Tufts University.

http://www.walkfriendly.org/

Portas, M. (2011) *The Portas Review: An independent review into the future of our high streets*, London.

http://www.aldercross.com.

Phil Jones Associates (June 2017) Shared Space Redefined: Pedestrian Priority and Informal Streets, Presentation at SoRSA Conference.

Residential Rental Housing Environment in India

Anwesha Chakrabarty

Abstract

This paper is an attempt to understand the present condition of residential rental housing in India. Being not much supported by government initiatives, this thriving market has flourished on its own varying from place to place based on the prevailing requirements. About one-tenth of the households in India lived in rented houses in 2011, of which four-fifths households lived in rented houses in urban areas. With more families able to depend on rental properties, rental housing avenues in cities have to be standardized. Enabling the development of a healthy formal rental-housing sector is significant for social well-being.

1.   INTRODUCTION

A house plays an important role in the life course events of any individual and family. Due to rapid urbanization in a developing country like India, accompanied by regular migration and frequent movement (mainly job specific and education), issues related to accommodation have become severe in larger urban areas. As a result, there has been overcrowding in urban areas with high density population effecting municipal services, vehicular movement and public transport.

As per Census of India, the total number of households in urban areas in 2001 were 53.7 million, which increased to 78.9 million in 2011 i.e. growth of almost 4 per cent CAGR (Compound Average Growth Rate) for duration 2001-2011. An examination of the residential rental housing situation in India during the last decades using data from Census of India and the National Sample Survey finds that more than one-tenth of the households in India lived in rented houses in 2011, of which almost four-fifths of the total households living in rented houses in India were in the urban areas. This increasing, trend under lines that India is marching towards rapid urbanization, UN estimates (World Cities Report 2016-Urbanization and Development: Emerging Futures) indicate addition of more 300 million urban residents by 2050.

On one hand, demand for shelter and rental housing has led to mass scale development of high rise society housing complexes in urban hinterlands for the skilled workforce or new breed of professionals – the educated class. On the other hand, this has also generated steady growth of slums, directing towards inorganic development with unplanned settlements for unskilled and semi-skilled workforce – the informal mass.

Anwesha Chakrabarty, *Urban Development Consultant*

Fig. 1: Framework for Rental Housing Inclusion-Exclusion Trend in India.

	Skilled				Semi Skilled				Unskilled			
	Hindu		Others		Hindu		Others		Hindu		Others	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Nuclear family	●	◑	◐	◕	●	◑	◕	○	◑	◐	○	○
Individual	◐	◑	◕	○	◐	◕	○	○	◐	◕	○	○
Accepted ●		Settled ◕		Uncertain ◑		Restricted ○					

Source: Estimates, 2015-16

2. RENTAL HOUSING MARKET

Rental housing markets are both inclusionary and exclusionary in India. Exclusion occurs along both economic (rents, deposits) and social (religion, caste, regional association, gender and age factor, occupational status) lines. Generally, most accepted tenants are educated nuclear families with transferable job profiles. Single person, if female, with minority status, has difficulty in finding suitable neighborhood for rental accommodation. Prejudices vary irrespective of high education levels in Indian society. The perspective for inclusion-exclusion scenario in housing sector, covering various indicators is depicted in Fig. 1.

Rental housing caters to the whole spectrum of income groups. As cities experience a higher inflow of migrant population, suburbs and surrounding spaces develop rental housing capacities to meet the demand. They range from various categories of single family homes to high-end multi-bedroom apartments.

Often witnessed is that rental properties come in a variety of configurations. The higher budget being better placed with advantage of healthier environment and high quality of life in terms 24x7 amenities. Rental homes meant for modest income groups are generally concentrated around the cheaper suburbs, with travelling time issues and inconveniences. The lower income groups are pertinent to occupy slums or other kinds of irregular housing which tend to blight the urban landscape of growing cities. This adversely showcases the quality of growth of the urban area, and also creates a range of problems that range from increased crime rates to sanitation challenges.

Affordable rental housing is therefore an important preventive of unorganized growth. With more families able to depend on rental properties, the city's housing market as a whole gets more standardized. Increased competition among property developers and agents ensures that real estate prices are managed within the 'affordable' range. This also goes on to boost the overall economy of the city. Rental housing provides the much needed 'room for maneuver' for individuals and households in the context of rapid urbanization. It is also responsive to changes in individual and household life-cycles and is an asset for tenants as well as landlords. Not only economic status, but also social status determines rental market in India.

3. DRAFT NATIONAL URBAN RENTAL HOUSING POLICY, 2015

A need to create rental housing not only as an interim arrangement for those saving to own a home, but also for those who simply cannot afford to buy, has finally been recognized by the central government. The draft published in October 2015, is primarily a prescriptive detailing of the roles expected from state governments and urban local bodies. Central government, on its part, has refrained from making any financial commitments to promote rental housing. Officials concede that the very cause of promoting rental housing was defeated the moment central government decided to exclude the rental component from the purview of the 'Housing for All' by 2022 and Pradhan Mantri Awas Yojana (PMAY).

The rental policy identifies categories where the state is expected to promote directly such as 'shelters' for homeless, 'social rental housing' for urban poor and 'need-based rental housing' for migrant laborers, single women, men, students or other target groups. The key initiatives proposed in the draft policy include:

- Provide incentives (fiscal and non-fiscal) to the tenants, i.e. tax exemptions, housing vouchers, and others;
- Facilitate income tax concessions and incentives such as exemption from stamp duty, registration charge for institutional owners that create mass rental housing, especially catering to the affordable Social Rental Housing (SRH) sector;
- Encourage Residential Real Estate Investment Trust (RREITs), Public Private Partnership (PPP), Special Purpose Vehicles (SPVs), Residential Rental Management Companies (RRMCs), Social/Need Based rental Housing;
- Earmark certain percentage of dwelling units for Social/Need Based Rental Housing under various Central/State level Housing Schemes;
- 100 per cent deduction of the capital expenditure for building of mass rental housing either for own employees or for other socially vulnerable sections of the society under Corporate Social Responsibility (CSR);
- Facilitate modifications in the legal and regulatory mechanism namely in Lease/Rent Agreement, Building Permissions, etc.;
- Encourage adoption of the Model Tenancy Act, 2015;
- Create an online portal of database on rental housing stock, vacant houses/ properties and facilitate online system for mandatory registration, enquiry on rental housing;
- Exempt property tax for predefined period (say for 5 to 10 years) for Social Rental Housing properties;
- Develop strategies to deal with the vacant/locked properties in consultation with various stakeholders and come up with options/alternatives;

- Provide for fast adjudication process for resolution of disputes through rent tribunals; and

- Promote Residential Rental Management Companies (RRMC) to bring efficiency, especially in operation, maintenance and management of large-scale rental housing projects/schemes.

The policy is primarily encouraging social rental housing (which means rental housing where the rent is set at a level below the market rates) to make it affordable for poor people (EWS and LIG). It does not provide much direct benefit for Market Driven Rental Housing (MDRH). The policy encourages introduction of Residential Real Estate Investment Trusts (REIT), and Residential Rental Management Companies (RRMCs), PPP (Public Private Participation), and others. However, there is lack of clarity about the implementation and viability of such proposals. In India, office REITs are still not viable due to lower yield, residential yield is even below and range anywhere between 2-3 per cent across markets. With such kind of returns, how will the residential REITs be viable, is a question that should be addressed for seeing active private participation.

A lot has been emphasized to create of adequate rental housing stock but there is no mention on availability of land, high prices of land, etc. The policy is talking about fiscal and non-fiscal benefits like tax exemptions, housing vouchers, etc. and facilitate income tax concessions for institutional owners, however current residential rental yield does not support the whole idea. One initiative that can be implemented fast and will encourage private participation is 100 per cent deduction of the capital expenditure incurred on building of mass rental housing, either for own employees or for other socially vulnerable sections of the society under CSR.

Overall, the intent of the policy is admirable, but the draft does not provide much specific information in its current state. The policy is directionally right, however, much more is needed to address the issues at the implementation level and encourage adoption of the policy at each level, be it a central state or city. Government (Centre/ State) needs to focus on Rental Housing Schemes as it is also important factor for social welfare. The private sector needs to be incentivized to revamp the renting procedures and practices.

Rental housing can provide an opportunity to the tenants as well as enable a steady source of income to the owners that converts urban land into an investment. There is need for provisions such as increasing tax exemption for rental income from 30 per cent to 50 per cent while giving woman headed households full exemption.

To resolve some of these issues, the recently drafted Model Tenancy Act has spelled out the contractual agreement between tenants and landlords. It provides for fast

adjudication through rent tribunals and formalizes and standardizes rental housing on a nationwide basis. However, it requires states to take the politically-sensitive call of amending their existing rent control acts and officials concede that the response from states so far has been tepid. There is requirement of "Task Force on Rental Housing" to look at the means of increasing the stock of quality rental houses and to enable private sector to take up rental housing on a mass scale.

4.   AN ANALYSIS FOR RENTAL HOUSING

India with world's second largest population, rental housing substantially helps in meeting housing needs in urban areas. But it is also associated with various downsides. This has been depicted in SWOT analysis (Figure 2). The money spent on renting a home is obviously not an investment, which can yield returns. Residential investors are primarily in it for the capital appreciation a well-chosen

Fig. 2:   SWOT Analysis of Rental Housing in India.

Strength
- Closure to workplace and other basic needs/facilities.
- Time saving mostly for the floating population travelling huge distances mainly in large metropolitan cities.
- Person can move for better job opportunities - venture new destinations and experience.
- Compensate housing shortage in urban areas along with basic services like potable water, well laid out drainage system, sewerage network, sanitation facilities, electricity, roads and appropriate disposal of solid waste.
- Proper dwelling with work - office proximity plays a significant role in psychological health and living pattern.

Weakness
- Rental yield distorted/divergent with rental market being area specific, regional variations, climatic condition, cultural difference, requirement/need basis, budget, taboo, favourable neighbourhood and others.
- Lack of incentives for rental property by Government/ Real Estate.
- Problems with responsiveness/security/ class/structure/ reliability.
- Massive stocks of vacant houses due to lack of incentives in renting property and uncertainty.
- Often land up in staying in outskirts with low occupancy and absence of regular public transport system.
- Inadequate supply of affordable/ rental housing - with limited supply of houses to the increasing actual housing requirement.

Opportunity
- Reducing informal housing/slums with affordable rental housing schemes.
- A large proportion of residents in cities and towns of both developed as well as developing countries are tenants.
- There is tendency towards moving to urban places for job opportunities and education. Urban population is increasing many fold and is expected to be 50% of total population by 2040 in India.
- Provision of Social Rental Housing (SRH) will be beneficial for Below Poverty Line (BPL), Economically Weaker Section (EWS) and Low Income Group (LIG) households.
- With National Urban Rental Housing Policy, 2015(draft) further promotion to the rental housing sector
- Banks are not very active in sanctioning small ticket-size loans and the reduction in the outstanding housing loans to the low income segments.
- Creating a shadow/ parallel housing market.
- Achieve towards the goal of 'Housing for all by 2022'.
- Provides sense of privacy, safety, dignity and better living condition.

Threat
- More towards social change with nuclear families and increase in requirement of households/amenities in urban areas.
- Property ownership motivation is disturbed.
- Trend for rental housing in India declining with affrodable housing market growing and real estate price stabilizing.
- Role of property dealers/ agents - creating artificial crisis.
- Quality housing service with parking facilities negotiable.

Source: Estimates, 2015-16

property purchase can yield over a few years. Also, there is almost three times price difference between furnished rental houses and non-furnished ones.

Rental housing is one of the key features of vibrant housing markets and an essential component of affordable housing. However, housing in India has come to be dominated by ownership tenure, with formal rental housing, especially in the northern parts of the country, languishing. This could be attributed to various reasons, including the nature of existing rent control laws.

Rent control is inequitable as it benefits only those who are fortunate enough to be living in the regulated properties. For newcomers, it is harder to find affordable rental housing because no new rental housing is being constructed. As the city grows, for the low-income groups particularly, this leads to a worsening of their situation and could result in homelessness and slums. When rents are regulated, landlords may resort to other non prime means of rationing. This may result in discrimination against certain social groups and thus result in greater segregation.

Rent control reduces labour mobility, as those living in rent-controlled units are unwilling to move out because they will lose protection or proximity to work space. The unwillingness to move closer to places of employment results in inefficient use of resources and time, which are spent on longer commutes. Rent controls also considerably affect public finances through revenues as well as expenditures. Revenues are reduced as property tax collections fall below potential. This happens when property taxes are assessed on rental values and capping of rents results in a reduction of the tax base. Given the absence of affordable rental housing provided in the market, public resources would have to be used to create affordable housing. This is not only a strain on the public finance of the government, but is an inefficient expenditure, as it does not result in any productivity increases.

Despite the wide consensus that rent control is a misguided policy, there is no political will to remove it. This is due to the fact that the protected tenants are a strong and large group, mostly middle-class and quite vocal, and also because abolishing rent controls could be projected as being anti-poor, whether in fact it is so or not.

## 5.   TREND IN RESIDENTIAL RENTAL MARKET

Indian Experience

There is a multitude of changes and trends in the real estate market, which influences all aspects of the residential rental industry throughout various part of the country in effective manner. From investors keying into market growth areas to property managers making adjustments to meet tenant expectations, creating strategies that align with market trends will lead to enhance the rental market.

In 2011, only 28 per cent (Fig. 3) of India's city dwellers lived in a rented accommodation, which is a steep decline from the scenario in 1961 when

Fig. 3: Trend of Rental Housing from 1961-2011.
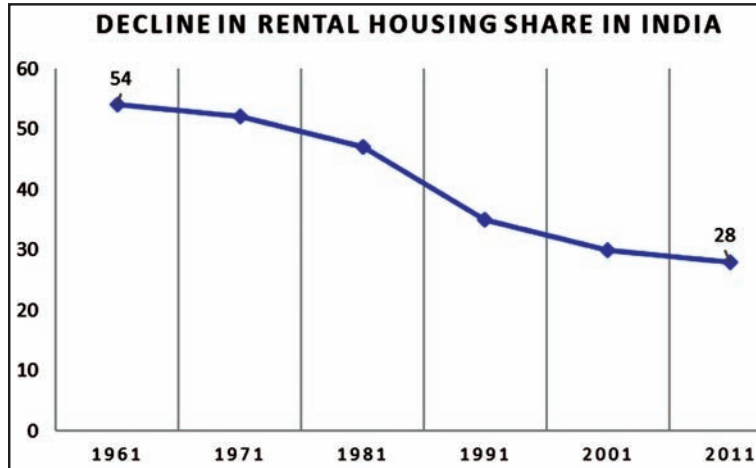
a majority of them (54 per cent) used to live in a rented house instead of owning one, according to analysis of India's housing pattern undertaken by the Economic Survey 2017-18. Over a span of 50 years, registered decline in CAGR of 1.3 per cent.

India's migration-rental philosophy suggests more urbanized States have higher proportion of rental housing. Estimates indicate that 60 per cent to 90 per cent of low rentals in India are in the income informal sector. Moreover, a constant watch on the prevailing rental developments will provide serious opportunities as it has for companies in the IT, ITES and the BPO sector that have been the key drivers in the commercial rental space for call centres and BPO office. Their massive recruitment drive necessitates large office complexes. This has spelt success of the real estate rental business.

Leased out industrial properties / plots of land for industrial projects have the advantage of long-term agreements between the owners and the tenants. The scene on the residential apartment rentals is looking up. The new concepts being developed are, in fact, redefining the traditional ideas that were synonymous with rental market in India. There is a multiplicity in urban rental market in India.

Multi - and bilateral development agencies along with Centre and State Governments Agencies need to formulate and implement suitable rental housing policies area / region specific with balanced tenure outcome. There is also requirement for pro-tenant Rental Control Act.

The provision of formal rental housing in India (Public, Public-Private and Private) indicates that there are still some constraints in these models towards successful implementation, wider acceptability and scalability to address overall housing shortage for the urban poor. Formulating workable models for provision of rental housing will require enabling legal, fiscal and institutional environment and Government has a large role to play in facilitating such synergies.

Rental arrangements in India are either covered by the restrictive rent control laws and lease agreements; or based on understanding between owner and tenant; depending on duration of stay, and number of people to be accommodated. The provisions are wide range which includes land rented but the structure belongs to the tenant (for example *Chauls* in Mumbai), employer provided tenements (mostly Government/ Institutional/ Public Sector Undertaking quarters'), sharing (similar

China
Real estate boom is progressive, and almost 90 per cent of the population owns their homes.
- The rental market in China is still evolving and rentals are quite high, given the quality of accommodation available.
- There are several types of affordable housing in China: economic and comfortable housing, price-capped housing, public and low-rent rental housing, and resettlement housing.

Singapore
Majority of residents live in dwellings built by the public sector and the public housing stock is predominantly owner occupied.
- Housing tenure forms are quite complex. In fact, public–private hybrids are sometimes defined as owned units, as rental units, or as private units.
- There is absence of any tenant protection law. The private rental sector operates freely to cater to the demand by residents as well as foreigners. Moreover after imposing immigration curbs, there has been significant drop in rental market.

Hong Kong
One of world's most expensive real estate market in Asia; for high-level expatriates to rent housing.
- A mix of structural and external factors have contributed to the high-priced property market with high land premium.
- Government owns all land in the city and leases a limited amount each year to developers to build housing or commercial buildings
- Prices of government subsidised housing – which first-hand owners can sell in the private market after five years and reimburse the government for the discounts it gave them is on rise.

Malaysia
Developers are focusing on affordable housing to cater for the demand rather than investing on rental housing.
- Small rental market with only 6% of the housing stock is in the private rental sector.
- About 85% of total stock is owner-occupied, while government-provided housing accounts for 7% of the stock.
- Value of residential property transactions fell by 11.1% in 2016 and by 10.5% in 2015, after increases in value of 13.9% in 2014 and 6.3% in 2013

Thailand
Recent economic progress with growing consumer confidence leads to improved demand for all types of property
- More demand for office space rather than residential apartment in the urban core. Rental condominiums for tourism purpose is polular
- Lack of affordability in the mass residential market

institution or work place/ location), sub-letting (relatives or known), and various leasing terms and conditions depending on occupational status and affordability.

5.2   International Experience

A glimpse of Asian countries for residential rental markets has been given below. While India is still struggling to formulate policies towards formal affordable rental housing; many countries worldwide are already addressing their housing shortage through formal and informal rental housing successfully. A comparative analysis of rental property ownership is depicted in Table - 1.

These trends in Table - 1 suggest that renting is an urban prodigy worldwide. Within the Africa and Asia, the progressing economies of cities like Cairo in Egypt and

Table 1:   Residential Property Ownership Status for selected Countries / Cities.

Countries	in %			Cities	in %		
	Owned	Rented	Others		Owned	Rented	Others
Africa							
Egypt	77	22	1	Cairo	37	63	-
South Africa	69	31	-	Johannesburg	55	42	3
Asia							
India	87	11	2	Bangalore	43	55	2
Thailand	87	13	-	Bangkok	54	41	5
South America							
Bolivia	60	18	22	Santa Cruz	48	27	25
Brazil	74	25	1	Sao Paolo	70	20	10
Europe							
Germany	40	60	-	Berlin	11	89	-
Netherland	53	47	-	Rotterdam	26	49	25
United Kingdom	69	31	-	London	58	41	1
North America							
U.S.A.	66	34	-	New York	45	55	-

Source: UNCHS, 2011.

Single Family Rental	Mess/ Paying Guest Accommodation	Shared Apartment
• Fastest-growing segment in metropolitan cities • Mostly formal employment • Most of the developers target this sections for investment • Creates urban sprawl eventually	• Either student or job seeker or new employee • Potential candidate for rental housing • Mostly short duration stay	• Mostly bachelor accommodation • Temporary basis – informal employment • Short term stay • Will opt for rental accommodation, if only financial viable

Bangalore in India, allow greater mobility of people from rural to urban areas. Both cities have more than 50 per cent tenants in their population. The fact that the countries which are economically developed have much higher rate of renting again explains the link between renting and economic development and in turn urbanization. According to this data, Germany has 60 per cent population in the country as renters, while in its capital city Berlin, nearly 90 per cent population are in rental housing. The other mentioned cities, London (40 per cent), Rotterdam (49 per cent) and New York (55 per cent) have high percentage of tenant population. Whilst developed countries have abandoned first-generation controls, most of the developing countries still retain some form of rent regulation, ranging from very restrictive to well aligned with market realities.

6.   CONCLUSIONS

Investment in housing and property is beset by many uncertainties in the prevailing real estate scenario giving rental housing opportunities to flourish in

an organized way. Most of the metropolitan cities in India on an average has 30 per cent to 40 per cent floating population, which does not necessarily want to settle or buy an accommodation in the given working and institutional set-up. However, the residential rental market is extremely diverse and unorganized. The arcade endures by property dealers and individual homeowners or brokers, and not by any builders or real estate companies, for whom building a project for the exclusive use of rental is unviable. The rental management companies needs to be organized and streamlined.

Residential rentals for flats and apartments, independent houses and mess paying guest accommodation are more popular in metropolitan cities and state capitals in India. These cities have far greater avenues for those who are on transferable jobs or looking for job opportunities. This has created a good market for those seeking to invest in property i.e. investing in a property for rental purposes as they ensure good rentals on a regular basis. While the end user living on rent keeps looking for that elusive silver lining and hopes property prices will fall, investors and individuals who do have that second or third house will continue to see the sun shine for long. Development of residential rental markets depends on the enabling environment of the country in terms of policy, laws, regulations, taxation, etc., and the capacity to raise significant financial resources from investors and financiers. The fiscal treatment of this sector by public authorities can also play a decisive positive or negative role in expanding (or not) an affordable rental sector. There is a requirement to adopt or built a rent model. This can be initiated by start-ups through low-cost rental homes targeting mainly students and working population. Rental acts supporting rental markets will help in easing the high rents.

Enabling the development of a healthy formal rental-housing sector is important for a number of reasons. First, the rental sector is a natural outlet for those households who do not have sufficient income to afford a home or have not saved enough to meet down-payment requirements. Second, because in many countries, a good percentage of the income earned is informal, there are limits for people who could qualify for mortgage loans. Third, vibrant rental markets are necessary for workers' mobility. Fourth, home ownership produces greater urban sprawl. This is particularly true as housing prices increase and people are forced to move farther and farther away from the city center. Housing is considered as one of the key sectors to promote growth by increasing demand for steel, cement, besides creating additional jobs. India has a growing appetite for rental housing. However, there is a big gap between supply and demand largely due to what commentators describe as a trust deficit between property owners and renters. Moreover, the government (both central and state) policies are not very supportive. These owners keep their properties locked up as they dread dealing with estate agents renting their property to unverified tenants who turn into squatters. On the other hand, the trust issue over tenants remains because of lack of verified listings and the fear of losing security deposits.