

NAGARLOK

Quarterly Journal of Urban Affairs

ISSN: 0027-7584

Volume LIII

Issue 4

December 2021

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Nagarlok, a quarterly journal of Urban Affairs, is recognised under the UGC-Care List Group I. It emphasises research and scholarly analysis on range of urban themes: Urban life, metropolitan systems, city regions, urban planning and development, urban infrastructure, urban economy, urban environment and sustainability and urban policy. With a cutting edge approach to linking theoretical development and empirical research, *NAGARLOK* encompasses key material from an unparalleled range of critical, comparative and geographic perspectives.

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Subscription Rates:

Annual subscription: Rs. 200

Single copy: Rs. 50

Published by Surendra Nath Tripathi, Director General, IIPA for Indian Institute of Public Administration, New Delhi and Printed at New United Process, New Delhi-110028

NAGARLOK

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October-December, 2021

Issue 4

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Assessment of Urbanisation's Trends and Patterns: A Global Perspective

MEET FATEWAR*

VINITA YADAV**

ABSTRACT

Urbanisation is defined as an index of transformation from agrarian economies to modern industrial ones. In the world, the majority of the population lives in urban settlements with 55.29 per cent in 2018, though the definition of urban settlements differs from continent to continent or country to country. In fact, the variation in the number of criteria has also been observed between the countries of the same continent. Therefore, to compare the urbanisation level between different countries by using national criteria is broadly non-comparable due to the variation in the definition of 'urban settlement'. India describes the definition of 'urban settlement' more specifically and in a more meaningful manner. Thus, the analytical research has been carried-out to analyse the urbanisation pattern, assess the level of urbanisation, and study the urbanisation trend at both the levels i.e. international (continent-wise) and national (state-wise).

Keywords: *Urbanisation level, urbanisation pattern, urban settlement, urbanisation trend.*

INTRODUCTION

According to Davis & Golden (1954), urbanisation is described as the ratio of urban population to the total population. It, usually, refers to the share of urban population from the total population, which resides in urban settlements. It is a process of becoming urban, moving to urban settlements, shifting from agriculture to non-agriculture pursuits, and corresponding changes in the behaviour patterns (Pandit, 1972). Therefore, urbanisation is also described as an index of transformation

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from agrarian economies to modern industrial economies (Datta, 2006). In fact, the continuous urban spread constituting a town and its adjoining Out-Growths (OGs) form an Urban Agglomeration (UA), which constitute a part of urban population and included in the estimation urbanisation level (Gupta, 2013). So, it is important to define the urban settlement precisely based on the urban characteristics. Additionally, there is no uniform definition of 'urban settlement' throughout the world; it varies from country to country (Bhagat, 2011). Hence, there is a need to understand the concept of urbanisation in a holistic manner along with the understanding of some concepts related to it.

The research paper tries to study the definitions, and analyse the pattern and level of urbanisation at both the levels i.e. international (world) and national (India). The second section explains the research methodology by defining the source of secondary data collection along with the time-period and research type. The third section compares the variation in the definition of 'urban settlement' in the most populated countries of the world and describes the change in the definition of 'urban settlement' in India over a period of time. The fourth section studies the continent-wise pattern and level of urbanisation. The fifth section analyses the urbanisation trend, interprets the urbanisation pattern, and highlights the impact of change in the definition of 'urban settlement' at national and state levels. The last section concludes the research paper briefly.

RESEARCH METHODOLOGY

The analytical research has been carried-out to understand the urbanisation level, pattern, and trend at both the levels, i.e. international level (world) and national level (India). For world level analysis, the data collected and published by (i) United Nations Department of Economic and Social Affairs (UNDESA) in 2018; and (ii) United Nations Statistics Division (UNSD) in 2019 has been analysed for seven continents (233 countries). Whereas, for national level analysis, the data collected and published by (i) Census of India; and (ii) Indiastat website for the year 2011 has been analysed for 28 States and eight Union Territories (UTs). The whole research is carried-out in three stages. In the first stage, the variation in the definition of 'urban settlement' is studied at international and national levels based on the United Nations criteria by using UNSD (2019) data. Later on, at the international level, the two most populated countries from each of the continents have been identified to review the variation in the definition of 'urban settlement'. While, at the national level, the change in the census definition of 'urban settlement' is reviewed, i.e. until 1951 and after 1951. In the second stage, at international level, the continent-wise pattern of urbanisation

is studied for seven continents (22 sub-continents) based on the data set of UNDESA (2018). Further, the country-wise urbanisation level is analysed to identify the top five urbanised countries in the world. In the third stage, at national level, the urbanisation trend of India has been assessed since 1901. Besides, at state level, the urbanisation pattern and urbanisation level of 28 states and eight UTs are calculated and analysed.

ASSESSMENT OF URBANISATION

Definition of Urban Settlement

The definition of urban and rural settlements is not uniform throughout the globe, and it varies from country to country. It is difficult to have a uniform definition of 'urban and rural settlement' throughout the world. Hence, United Nations (UN) has identified five major criteria to define the urban settlements, i.e. (i) *Administrative Status*: based on administrative, historical, or political considerations instead of on statistical considerations; (ii) *Demographic Characteristic*: based on population threshold or a minimum population density or both; (iii) *Local Government Area*: based on agglomerations, or localities having some form of local government, excluding population threshold; (iv) *Urban Characteristics*: based on established street patterns, contiguously aligned buildings, and public services (piped water supply, sewer system, provision of electricity, school, hospital, etc.); and (v) *Predominant Economic Activities*: based on workforce engaged in non-agricultural pursuits (Gupta, 2013). The majority of countries in the world define urban settlements based on the aforesaid criteria.

Out of 233 countries, (i) 121 countries are using administrative criteria (amongst these, 59 countries adopt administrative criteria as the only criterion), (ii) 108 countries are using demographic criteria (amongst these, 37 countries adopt demographic criteria as the only criterion), (iii) 69 countries are using urban characteristics criteria (amongst these, 8 countries adopt urban characteristics criteria as the only criterion), and (iv) 38 countries are using economic criteria to define the urban settlements (UNDESA, 2018a). In the world, majority of the countries follow either one-fold criteria (104) or two-fold criteria (66). Further, there are 12 countries with no or unclear definition of 'urban settlement'; whereas, 12 countries are entirely urbanised (Table 1).

The number criteria also varies from continent to continent or country to country. For instance, Nigeria (Africa Continent) follows one-fold criteria; USA (Northern America Continent) follows two-fold criteria; and India (Asia Continent) follows four-fold criteria. The

variation in the number of criteria has also been observed between the countries of the same continent. For instance, China follows one-fold criteria, but India follows four-fold criteria, and both are located in the same continent, i.e. Asia (Table 2).

TABLE 1: CRITERIA USED BY COUNTRIES TO DEFINE ‘URBAN SETTLEMENT’

S. No.	Number of Criteria	Countries using such Criteria	
		(in no.)	(in %)
1.	One Criteria	104	44.64
2.	Two Criteria	66	28.33
3.	Three Criteria	28	12.02
4.	Four Criteria	11	4.72
5.	Entirely Urban Population	12	5.15
6.	Unclear / No Definition	12	5.15
7.	Total Countries	233	100.00

Source: Authors Calculation. Data from UNDESA, 2018a.

TABLE 2: CONTINENT-WISE DEFINITION OF ‘URBAN SETTLEMENT’
IN MOST POPULATED COUNTRIES

S. No.	Continent / Country	Criteria		Definition
		(in no.)	(description)	
A.	Asia			
1.	China	1	Administrative Status	As per the regulation on the classification of urban or rural residence for statistical purposes.
2.	India	4	Administrative Status; Demographic Characteristics; and Predominant Economic Activities	(i) Statutory Towns (STs): all places with municipal corporation, municipal area committee, town committee, notified area committee or cantonment board; (ii) Census Towns (CTs): All places having (a) population 5,000 or more, (b) at least 75 percent of the male main working population engaged in non-agricultural pursuits, and (c) density of at least 400 per square kilometre or 1,000 persons per square mile.

(contd.)

B.	<i>Africa</i>			
3.	Nigeria	1	Demographic Characteristics	Towns with 20,000 inhabitants or more.
4.	Ethiopia	1	Demographic Characteristics	Localities with 2,000 inhabitants or more.
C.	<i>Europe</i>			
5.	Russian Federation	2	Demographic Characteristics; Predominant Economic Activities	On the basis of number of inhabitants and the predominance of non-agricultural workers and their families.
6.	Germany	1	Demographic Characteristics	Communes with at least 150 inhabitants per square kilometre.
D.	<i>Latin America and the Caribbean</i>			
7.	Brazil	1	Administrative Status	Area inside the urban perimeter of a city or town, as defined by municipal law.
8.	Mexico	1	Demographic Characteristics	Localities with 2,500 inhabitants or more.
E.	<i>Northern America</i>			
9.	USA	2	Demographic Characteristics	Agglomerations with 2,500 or more inhabitants and a population density of 1,000 persons per square mile or more.
10.	Canada	2	Demographic Characteristics	Areas with (i) 1,000 or more inhabitants, and (ii) a population density of 400 persons per square kilometre or more, based on population counts from the recent population census.
F.	<i>Oceania</i>			
11.	Australia	2	Demographic Characteristics and Urban Characteristics	Significant Urban Centres representing concentrations of urban development with 10,000 inhabitants or more.
12.	Papua New Guinea	1	Demographic Characteristics	Centres having 500 inhabitants or more, excluding separately located schools, hospitals, missions, plantations, rural settlements, and rural villages regardless of population size.

Source: Author. Data from UNDESA, 2018a and UNSD, 2019.

Note: The urban area definition of Antarctica is not considered as it has zero population.

Moreover, the threshold limit of a single criteria such as population size varies from as low as 200 in Greenland, Iceland, and Norway to 50,000 in the Republic of Korea (UNDESA, 2018a & UNSD, 2019). Therefore, to compare the level of urbanisation between different countries by using national criteria is broadly non-comparable due to the variation in the definition of 'urban settlement'. However, at the same time, India is the country that describes the definition of 'urban settlement' more specifically and in a more meaningful manner by using three major criteria to define an 'urban settlement', i.e. administrative status, demographic characteristics, and predominant economic activities.

Definition of 'Indian Urban Settlement'

In India, there are two types of urban settlements, i.e. (i) Statutory Town (ST), and (ii) Census Town (CT). STs are the places with a municipality, corporation, cantonment board or notified town area committee, etc, and are notified by the state government. CTs are defined based on the three-fold criteria, i.e. (a) minimum population of 5,000; (b) at least 75 per cent of the male main working population is engaged in non-agricultural pursuits; and (c) minimum population density of at least 400 persons per square kilometre or 1,000 persons per square mile (Census of India, 2011a). However, the definition of 'urban settlement' has been changed multiple times by the Census of India based upon the administrative status, demographic characteristics, and predominant economic activities.

Before 1951, the urban settlements of India were defined based on the four-fold criteria, i.e. (i) every municipality of whatever size; (ii) all civil lines, which are not included within the municipal limits; (iii) every cantonment; and (iv) every other continuous collection of houses, permanently inhabited by not less than 5,000 persons. The definition of urban settlements was ambiguous in nature, which led to the revision in the definition. In 1951, the revised definition followed the two-fold criteria, i.e. (i) places with at least 5,000 population; (ii) places having smaller population with certain urban characteristics. In fact, the revised definition is vague and not able to define the characteristics of Indian towns. Therefore, to remove the vagueness and ambiguousness from the definition, again the four-fold criteria was introduced with different criteria in 1961, i.e. (i) all the places with a city corporation, municipality, cantonment board or notified town area committee; (ii) all other places which satisfied the following criteria: (a) minimum population of 5,000; (b) at least three-fourth of the occupation of the working population should be outside of agriculture, and; (c) population density of at least 400 persons per square kilometre or 1,000 persons per square mile. This

definition seemed to be more balanced with less ambiguity. In 1971, no major change been made except the one in subpart (c) of part (ii) i.e. at least 75 percent of the male main working population engaged in non-agricultural pursuits' (Aijaz, 2017). The new definition is based on (i) administrative status; (ii) population size; (iii) workforce in predominant economic profile; and (iv) population density. Since 1971, the Census of India is following almost the same definition to define the urban settlements.

Urbanisation Pattern Across the World

The total population of the world was 7,632.8 million in 2018. Out of which, majority of the population resides in Asia followed by Africa and Europe with 59.55 per cent (4,45.1 million), 16.87 per cent (1,287.9 million), and 9.73 per cent (742.6 million) respectively. Whereas, Antarctica is the only continent of the world with zero population. The major portion of the world's total population resides in urban settlements with a share of 55.29 percent (4,219.8 million). The urbanisation level in different continents of the world varies significantly. Northern America is the most urbanised continent of the world followed by Latin America and the Caribbean, and Europe with 82.17 per cent (299.0 million), 80.68 percent (526.1 million), 74.45 percent (552.9 million) urbanisation level respectively. While, Africa is the least urbanised continent followed by Asia with 42.52 per cent (547.6 million) and 49.86 percent (2,266.1 million) urbanisation level respectively (UNDESA, 2018a and UNDESA, 2018b). Nevertheless, in terms of absolute number, Asia has the largest number of people residing in the urban settlements because of its large population size (4,545.1 million) despite having a low urbanisation level. Additionally, out of all the sub-continent (22), the most and least urbanised sub-continent are Australia / New Zealand and Melanesia with an urbanisation level of 86.10 percent (25.4 million) and 19.39 percent (3 million) respectively; and both the sub-continent are located in the Oceania continent of the world (Table 3).

At country level analysis, the contribution of China's urban population is highest in the world's total urban population with 19.84 percent (837.0 million) followed by India and United State of America (USA) with 10.92 percent (460.8 million) and 6.37 percent (268.8 million) respectively. Out of the 233 countries, the top five urban populated countries cumulatively accounted for 44.95 percent (1,896.7 million) of the world's total urban population (Table 4). Whereas, the cumulative account of the top 10 and 15 urban populated countries increased to 56.81 percent (2,397.4 million) and 64.00 percent (2,700.5 million) respectively (UNDESA, 2018a & UNDESA, 2018b).

TABLE 3: CONTINENT-WISE URBANISATION LEVEL IN 2018

S. No.	Continent / Sub- Continent	Total Population		Urban Population		Urbani- sation Level (in %)
		(in million)	(in %)	(in million)	(in %)	
1.	Asia	4,545.1	59.55	2,266.1	53.70	49.86
1.1	Eastern Asia	1,653.9	21.67	1,039.8	24.64	62.87
1.2	South-Central Asia	1,963.3	25.72	710.9	16.85	36.21
1.3	Central Asia	71.9	0.94	34.6	0.82	48.18
1.4	Southern Asia	1,891.5	24.78	676.3	16.03	35.75
1.5	South-Eastern Asia	655.6	8.59	320.4	7.59	48.87
1.6	Western Asia	272.3	3.57	195.0	4.62	71.63
2.	Africa	1,287.9	16.87	547.6	12.98	42.52
2.1	Eastern Africa	433.6	5.68	121.3	2.87	27.98
2.2	Middle Africa	168.5	2.21	83.5	1.98	49.53
2.3	Northern Africa	237.8	3.12	123.6	2.93	52.00
2.4	Southern Africa	66.0	0.86	42.0	0.99	63.62
2.5	Western Africa	382.0	5.00	177.2	4.20	46.39
3.	Europe	742.6	9.73	552.9	13.10	74.45
3.1	Eastern Europe	292.0	3.82	203.2	4.82	69.62
3.2	Northern Europe	104.8	1.37	86.1	2.04	82.16
3.3	Southern Europe	151.9	1.99	108.6	2.57	71.52
3.4	Western Europe	194.1	2.54	155.0	3.67	79.86
4.	Latin America and the Caribbean	652.0	8.54	526.1	12.47	80.68
4.1	Caribbean	44.2	0.58	31.5	0.75	71.32
4.2	Central America	179.6	2.35	134.2	3.18	74.72
4.3	South America	428.2	5.61	360.4	8.54	84.15
5.	Northern America	363.8	4.77	299.0	7.09	82.17
6.	Oceania	41.3	0.54	28.1	0.67	68.17
6.1	Australia / New Zealand	29.5	0.39	25.4	0.60	86.10
6.2	Melanesia	10.5	0.14	2.0	0.05	19.39
6.3	Micronesia	0.5	0.01	0.4	0.01	68.72
6.4	Polynesia	0.7	0.01	0.3	0.01	44.45
7.	Antarctica	0.0	0.00	0.0	0.00	0.00
8.	Total World Population	7,632.8	100.00	4,219.8	100.00	55.29

Source: Authors Calculation. Data from UNDESA, 2018b.

TABLE 4: COUNTRY-WISE URBANISATION LEVEL IN 2018

S. No.	Country	Total Population (in million)	Urban Population		Level of Urbanisation (in %)
			(in million)	(in %)	
1.	China	1,415.0	837.0	19.84	59.15
2.	India	1,354.1	460.8	10.92	34.03
3.	United States of America	326.8	268.8	6.37	82.26
4.	Brazil	210.9	182.5	4.33	86.57
5.	Indonesia	266.8	147.6	3.50	55.32
6.	Top 5 Urban Populated Countries	3,573.5	1,896.7	44.95	53.08
7.	Rest of the World	4,059.3	2,323.1	55.05	57.23
8.	Total World Population	7,632.8	4,219.8	100.00	55.29

Source: Authors Calculation. Data from UNDESA, 2018b.

In the top five urban populated countries of the world, Brazil is the most urbanised country as its 86.57 percent population lives in the urban settlements, followed by USA and China with 82.26 percent and 59.15 percent level of urbanisation respectively. The lowest level of urbanisation in the top five countries is observed in India, which is just 34.03 percent. Furthermore, in 2018, the average level of urbanisation in the top five urban populated countries of the world was 53.08 percent, which was less than the world's average, i.e. 55.29 percent. India's low urbanisation level is one of the major reasons behind it. Interestingly, in the top 10 urban populated countries, the highest urbanisation level is also observed in Brazil (86.57 percent), which defines the urban area based on the administrative area (one-fold criterion). While, India (34.03 percent) is the least urbanised country in the top 10 urban populated countries of the world because of the high threshold limit of all the criteria (four-fold criteria) as compared to the remaining countries. Thus, from the analysis, India seems to be less urbanised as compared to the other most populated countries of the world.

Urbanisation Trends and Pattern in India

At the national level, the assessment of urbanisation has been carried-out by analysing the trend and pattern of urbanisation. In order to review the urbanisation trend, the 'Census of India' data has been studied and analysed at national level since 1901. The urbanisation trend helps to understand the process of urbanisation throughout the nation. Whereas,

in order to review the urbanisation pattern, a single point data has been studied and explored at the state level for the census year of 2011. The urbanisation pattern helps to understand the process of urbanisation within the nation, i.e. at state level.

Urbanisation Trend

In India, the level of urbanisation has been increased from 10.82 percent (25.8 million) to 31.16 percent (377.1 million) from 1901 to 2011 respectively. At the same time, the number of urban settlements has increased from 1,827 to 7,933 in 1901 to 2011 respectively. Since 1901, the maximum growth in the increase in the number of towns has been recorded in the last census decade (2001-11), i.e. 53.71 percent (Table 5). As a result of which, an absolute increase of 2,772 towns has been observed in 2011 (Datta, 2006 & MoUD, 2015). Approximately 32.8 percent (29.9 million) of the urban growth has occurred due to the reclassification of rural settlements into CTs from 2001 and 2011 (Pradhan, 2017). The analysis shows the gradual increase in the urbanisation level of the nation since 1901 continuously.

TABLE 5: TREND OF URBANISATION IN INDIA, 1901-2011

S. No.	Census Year	Towns (in no.)	Growth Rate of Towns (in %)	Total Population (in million)	Urban Population		Urban Growth Rate (in %)
					(in million)	(in %)	
1.	1901	1,827	-	238.4	25.8	10.82	-
2.	1911	1,825	-0.11	252.1	25.9	10.27	0.39
3.	1921	1,949	6.79	251.3	28.1	11.18	8.49
4.	1931	2,072	6.31	278.9	33.4	11.98	18.86
5.	1941	2,250	8.59	318.6	44.1	13.84	32.04
6.	1951	2,843	26.36	361.1	62.4	17.28	41.50
7.	1961	2,363	-16.88	439.2	78.9	17.96	26.44
8.	1971	2,590	9.61	548.2	109.1	19.90	38.28
9.	1981	3,378	30.42	683.3	159.5	23.34	46.20
10.	1991	3,768	11.55	846.4	217.6	25.71	36.43
11.	2001	5,161	36.97	1,028.6	286.1	27.81	31.48
12.	2011	7,933	53.71	1,210.8	377.1	31.16	31.81

Source: Authors Calculation. Data from Datta, 2006 and MoUD, 2015.

Interestingly, the definition to define urban settlement is different from state to state in India, which in turn affects the urbanisation level of the nation. According to the definition of state governments, India's level

of urbanisation was 26.69 percent (323 million) in 2011. Whereas, as per the definition of Census of India, the level of urbanisation has increased to 31.16 percent (377 million) in 2011. According to the estimates of the Agglomeration Index of 2008, the level of urbanisation was 55.3 percent in 2010. As per the analysis of the Joint Research Centre (JRC) of the European Commission, India seemed to be more urbanised than ever before with an urbanisation level of 63 percent in 2015 (Aijaz, 2017).

Urbanisation Pattern

In India, there are 28 States and eight Union Territories. As per the Census of India (2011), out of the total population of the nation (1,210.2 million), majority of the population lives in the 28 states with 97.3 percent (1,177.6 million); whereas, only 2.7 percent (32.6 million) lives in eight UTs of the nation. The same pattern has been observed in case of the urban population. The percentage of the urban population resides in the 28 states and eight UTs of the nation is 94.1 percent (354.9 million) and 5.9 percent (22.2 million) respectively. In 2011, the average urbanisation level of the nation is 31.16 percent (Census of India, 2011b). Based on the analytical analysis, it is observed that the average urbanisation level of eight UTs is more than the average urbanisation level of 28 states i.e. 68.09 percent and 30.14 percent respectively (Table 6).

TABLE 6: STATES AND UTs SHARE OF URBANISATION, 2011

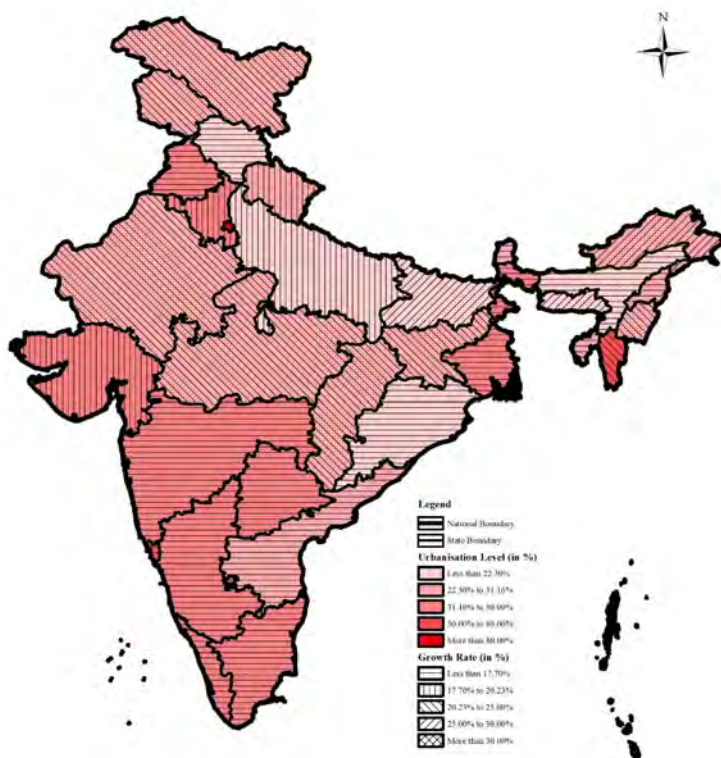
S. No.	State / UT	No.	Population		Urban Population		Urbanisation Level (in %)
			Total (in million)	Share (in %)	Total (in million)	Share (in %)	
1.	State	28	1,177.6	97.3	354.9	94.1	30.14
2.	UT	8	32.6	2.7	22.2	5.9	68.09
3.	Grand Total	36	1,210.2	100.0	377.1	100.0	31.16

Source: Authors Calculation. Data from (i) Census of India, 2011b; and (ii) Telangana Forest Department, 2014.

To understand India's pattern of urbanisation more comprehensively, the spatial analysis has been carried-out at national level. Out of the eight UTs, the highest urbanisation level is observed in Delhi followed by Chandigarh and Lakshadweep with 97.71 percent (16.36 million), 97.32 percent (1.02 million), and 78.12 percent (0.05 million) respectively. Whereas, out of the 28 states, the highest urbanisation level is observed in Goa followed by Mizoram and Tamil Nadu with 62.21 percent (0.91 million), 52.41 percent (0.57 million), and 48.40 percent (34.92 million) respectively. The urbanisation level of smaller states seems to be higher than the larger states such as Goa, Mizoram, etc. (Census of India,

2011b). The Southern and Western states seem to be more urbanised as compared to rest of the nation (Fig. 1).

Fig. 1: India's Pattern of Urbanisation, 2011



Source: Author's Calculation. Data from (i) Census of India, 2011b; and (ii) Telangana Forest Department, 2014.

Note: The growth rate of (i) Dadra and Nagar Haveli and Daman and Diu Ladakh; (ii) Ladakh; (iii) Telangana is considered equal to the growth rate of (i) Dadra and Nagar Haveli; (ii) Jammu and Kashmir; and (iii) Andhra Pradesh respectively as the aforesaid UT/State has been re-formulated after census 2011.

Further, out of the eight UTs, the maximum population growth rate is noticed in Dadra and Nagar Haveli and Daman and Diu followed by Puducherry, and Ladakh with 55.88 percent (0.34 million), 28.08 percent (0.85 million), and 23.40 percent (0.06 million) respectively. Whereas, out of the 28 states, the maximum population growth rate is noticed in Meghalaya followed by Arunachal Pradesh and Bihar with 29.95 percent (0.59 million), 26.03 percent (0.32 million), and 25.40 percent (11.76 million) respectively (Census of India, 2011b). Therefore, North-Eastern and Eastern states have shown a higher growth rate as compared to the rest of the nation in the last decade.

CONCLUSION

Urbanisation is measured as the percentage of urban population living in the urban settlements. The world's level of urbanisation was 55.29 percent (4,219.8 million) in 2018. The definition of 'urban settlement' differs from continent to continent. In fact, different countries within the same continent have defined 'urban settlement' differently such as India follows four-fold criteria; whereas, China follows one-fold criteria but both are in the same continent, i.e. Asia. However, majorly, the 'urban settlement' definition depends upon the five criterions, i.e. (i) administrative status, (ii) demographic characteristics, (iii) local government area, (iv) urban characteristics, and (v) predominant economic activities. In the tally of top five most urban populated countries, India seems to be less urbanised due to the high threshold limit of four-fold criteria. However, at the same time, India is the country that describes the definition of 'urban settlement' more specifically and in a more meaningful manner. In addition, the criterions to define urban settlement are not uniform in India and differ from state to state. As per the state government, the urbanisation level of India is 26.69 per cent (323 million) in 2011; whereas, as per the Census of India, it is 31.16 percent (377.1 million) in 2011. Also, the urbanisation level of smaller states seems to be higher than the larger states. Moreover, based on the Census of India (2011), the Southern and Western states are more urbanised as compared to rest of the nation. Whereas, the North-Eastern and Eastern states have shown a higher population growth rate as compared to the rest of the nation in the last decade, i.e. 2001-11. Therefore, it is difficult to have a uniform or common definition of 'urban settlement' throughout the world or continents or sub-continents or country, and sometimes, even within the same country such as India.

ACKNOWLEDGEMENT

The authors are grateful to Mrs. Deepika [Assistant Professor (Guest Faculty), Faculty of Planning and Architecture, Pandit Lakhmi Chand State University of Performing and Visual Arts, Rohtak, Haryana] for their valuable comments during the detailed discussion on the first draft of the manuscript. The authors would also like to thank Mr. Shikhar Agrawal [Principal Architect, Shimod Studio, Ghaziabad, Uttar Pradesh] for his assistance in the data collection.

Disclosure Statement

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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Sustainable Cities for Sustainable Development

SHIPRA MAITRA*

ABSTRACT

By 2030, India's urban population is projected to increase to 600 million. However, the present level of urbanisation (31.1%) is lower than its peer group of developing countries like China, Indonesia and Brazil. Nevertheless, Indian cities face severe urban challenges in terms of deficits in infrastructure, governance and sustainability that cumulatively pose a challenge to India's growth trajectory. The major challenge is to create competitive and inclusive cities. The flagship programme of the Government of India, the Smart City Mission tries to address these challenges to make its cities liveable and sustainable. This paper focuses on the nature of unbalanced urbanisation in India and whether the Smart City Mission (SCM) can work towards sustainable development synchronising spatial and economic growth. Bulk of investments of this Mission is earmarked for the cities which are already contributing to increasing inequality. It is quite likely that such investments will increase migration, leading to more deprivation of smaller towns. Unless, benefits of the smart cities are spilled over to the neighbouring areas, the intended inclusive mission may result in exclusion of economically weaker sections of the cities as well as the rest of India.

Keywords: *Inclusive development, Inequality, Smart city, Affordable housing*

The 2030 Agenda for Sustainable Development, put forth at the United Nations, was adopted by 193 countries including India in September 2015. The Agenda is a Plan of Action for People, Planet and Prosperity, and 17 Sustainable Development Goals (SDGs) emanate from it and form the Results Framework. The SDG framework builds on and amalgamates the Millennium Development Goals (MDGs) adopted in 2001 for the period up to 2015, with the Rio+20 Declaration of 2012 on environment.

The SDG 11, out of 17, focuses on inclusive cities, which are

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becoming the core of development agenda of emerging economies in particular, that are rapidly being urbanised. Cities in emerging economies are largely captive of inequitable prosperity.

India is predicted to be in the midst of a major urbanisation boom. By 2030, India's urban population is projected to increase to 600 million. However, the present level of urbanisation (31.1%) is lower than its peer group of developing countries: China (45%), Indonesia (54%), Mexico (78%) and Brazil (87%). This positive trend of urbanisation is also accompanied by its own unique set of issues. Indian cities face challenges in terms of deficits in infrastructure, governance and sustainability. With rapid urbanisation, these problems are going to aggravate, and can cumulatively pose a challenge to India's growth trajectory.

The major challenge is to create competitive and inclusive cities (Chandrasekhar et al., 2014, NIUA, 2017).

India's effort to achieve inclusive urbanisation is evolving in the spirit of realising the SDGs. It is based on competitiveness, sustainability and inclusiveness with sharp focus on efficient delivery of key public goods and services like health, education, power, water supply and other infrastructure including connectivity. This will help in promoting entrepreneurship and private investment with optimum mix of public-private partnership. The framework identifies some major components of equitable development, i.e. sustainable livelihood, human capital, social development with inclusiveness, governance and environmental sustainability.

Along with the prosperity, Indian cities, especially the mega cities face very serious challenges of inequality, unplanned urbanisation, mass migration, poverty, unemployment and the like, threatening their quality of life and sustainable growth (Nandi et al, 2013). The flagship programme of the Government of India, the Smart City Mission tries to address these challenges to make its cities liveable and sustainable. This paper focuses on the nature of unbalanced urbanisation in India and whether the Smart City Mission (SCM) can work towards sustainable development synchronising spatial and economic growth.

Challenge of Urbanisation in India

The process of urbanisation is continuing but not accelerating fast in India. It took four decades (1971-2011) to increase the share of urban population in total population by 10 per cent i.e. from 21 to 31.16 per cent. Still now, with a little more than 377 million, it is about a third of India's total population, despite being the second largest urban settlement in

the world. It is estimated that the pace of urbanisation will be a lot faster in the coming decades, from 377 (31%) to 600 (41%) million by 2031 i.e. two decades (PIB 2015)). The major indicators of urbanisation are demographic and spatial. The demographic components are represented by the proportion of urban population in total population and growth rate of urban population. The proportion of urban population has increased over time as revealed in every Census. Recently it increased from 27.78 per cent in 2001 to 31.16 per cent in 2011. But the growth rate of urban population declined from 3.1 per cent in 1991 to 2.76 per cent in 2011.

The spatial components are represented by increase in number of Urban Agglomeration (UA) or increase in municipal area and increase in number of Census towns.

Census town – satisfying the three criteria of urban areas as specified in Census but without a notified urban local body;

Urban Agglomeration (UA) – continuous urban spread with a town and its outgrowth, or two or more physically contiguous towns with or without outgrowth with at least one statutory town; and

Outgrowth – Areas developed outside the limits of statutory towns but with urban amenities (Table 1).

It is clear that urban areas are increasing in space. But growth of statutory towns is much less than growth of census towns. It implies that spatial congestion is taking place outside the villages for various reasons. But urban services are not forthcoming as there is no urban local body to supply the basic services. Not only the metro cities (population more than one million), but comparatively smaller towns also have become victims of unplanned urbanisation.

The share of population has gone up in metro cities (above one million) as well as in the towns with population below 20,000 but other size classes of towns are losing population share (Table 2). Large UAs

TABLE 1: INCREASE IN UAs, TOWNS AND OUTGROWTH (OG)

<i>Dwelling Units (No.)</i>	<i>2001</i>	<i>2011</i>	<i>ACGR (%)</i>
Statutory Towns	3799	4041	0.62
Census Towns	1362	3894	11.08
Urban Agglomerations (UAs)	384	475	2.15
Outgrowth	962	981	0.19

Source: Census of India, 2011.

Note: *Statutory towns* – places with a notified urban local body.

are increasing in area while the smallest towns are increasing in number in order to take advantage of some extended infrastructure like road networking, market facilities or industrial activities.

TABLE 2: GROWTH OF URBAN POPULATION (2001-2011)

Size Class	Population Range	Per cent share in total Population	
		2001	2011
Class IA	5 million and above	21.22 (6)	22.56 (8)
Class IB	1 million to 5 million	16.93 (29)	19.76 (44)
Class IC	100,000 to 1 million	31.78 (359)	27.89 (416)
Class II	50,000 to 100,000	9.50 (404)	8.53 (474)
Class III	20,000 to 50,000	11.76 (1163)	11.09 (1374)
Class IV-VI	Below 20,000	8.80 (2417)	10.17 (3857)

Source: Census of India, 2011.

Note: The figures in brackets are number of towns in different categories.

In terms of growth rates, the cities above one million are growing annually at 3.2 per cent while Class II towns are growing at 1.8 per cent that is almost half the rate of growth of metro cities. The growth rate of census towns (2.7%) is in between these two rates. Even if the rate of growth of urban population has declined, the growth rate of metro cities is the highest among the size classes of urban settlements (Census 2011). But these are haphazard expansions, not accompanied by urban infrastructure. At the bottom of the urban structure, census towns are growing but there is no civic body to take responsibility of basic services in these towns. On the other hand, the expansion of city population is beyond the capacity of municipal corporations to supply services.

It appears that emergence of new urban centres and expansion of municipal limits largely account for spread of urbanisation.

Demographic factors are losing significance in comparison. Demographic influence has been governed by the rate of natural growth of population and growth of migration. The average rate of natural growth has declined from 1.9 per cent in 2001 to 1.6 per cent in 2011. It has declined uniformly both in urban and rural areas.

Employment induced migration rate has also reduced in the last decade and earlier. Poverty alleviation programme and employment generating programmes in smaller towns and economically weaker states have, in the long run, been able to reduce outmigration (Chandrasekhar et al 2014). Even in the national capital of Delhi with such strong pull factor, the rate of migration is lower than the rate of

natural increase; even though the natural increase is declining annually. During 2001-2011, Delhi added around 250,000 persons through natural growth and 100,000 through migration annually on average (*Economic Survey of Delhi, 2020-21*).

The data so far shows that the new Urban Agglomerations (UAs), many of which became million plus in 2011 are attributed to the growth and merger of new census towns in close proximity to a statutory town. The Census data also reveals that the cities with population of more than five million have registered the highest growth rate of seven per cent with substantial increase in the boundaries.

India, having the second largest urban population and experiencing much faster urban growth, compared to earlier decades, faces extreme challenge of developing economically productive and socially inclusive settlements and strike a balance among spread of development in different size classes of urban areas. Overcrowded cities and towns with infrastructure bursting at the seams are familiar scenes in India. This problem will only worsen without proper interventions. Cities as engines of growth will only expand in size and result in spatial concentration. The country's urban population contributes over 65 per cent of India's GDP. This will increase to 75 per cent by 2030. On the other hand, there is little incentive for people to migrate out of cities and contribute to balanced regional development. Earlier attempts at providing better urban infrastructure or at creating new townships have not been able to deal with the issue of liveability satisfactorily. Even, the creation of Special Economic Zones (SEZs) faced problems of lack of social infrastructure, which usually means access to avenues of education, health, arts, sports, and so on. Uncontrolled occupation of space in Indian cities has resulted in proliferation of slums and shortage of infrastructure in urban settlements threatening the quality of life and environmental sustainability (Coelho et al, 2011).

Slums: Threat to Inclusiveness

There has been an increase in urban population during the last two census periods, followed by an increase in slum population, though it has declined a little by percentage. In absolute numbers, 6.5 crore slum population (2011) is a huge number with implicit deprivation in medical, educational and environmental components. This can be seen in Table 3.

The state wise distribution of slum population during 2001-2011 reveals the spatial challenges of inclusiveness among the 15 major states with significant share of slum population, nine states have shown an increase in share with Andhra Pradesh having the highest increase in

TABLE 3: GROWTH OF SLUMS IN INDIA

<i>Components</i>	<i>2001</i>	<i>2011</i>
Urban Population (crore)	28.6	37.7
Slum Population (crore)	5.2	6.5
Slum Population as per cent of Urban Population	18.3	17.4

Source: Census of India 2001, 2011.

the share in 2011, compared to 2001, followed by Bihar, Chhattisgarh, Karnataka, Madhya Pradesh, Odisha, Rajasthan, Tamil Nadu and West Bengal. On the other hand, Maharashtra showed a significant decline in the share followed by the remaining five states (Gujarat, Haryana, Delhi, Punjab and UP). Inclusive urbanisation remains an illusion without achieving slum-free India. Sustainable cities need to deliver sustainable living standards (Table 4).

Initiatives for Balanced Urbanisation

India's urban experiments since Independence can broadly be divided in three phases. The first 15 years of planning era were marked by

TABLE 4: DISTRIBUTION OF SLUM POPULATION IN MAJOR STATES

<i>S. No.</i>	<i>States</i>	<i>2001</i>	<i>2011</i>
1.	Andhra Pradesh	12.0	15.6
2.	Bihar	1.6	1.9
3.	Chhattisgarh	2.1	2.9
4.	Gujarat	3.8	2.6
5.	Haryana	3.2	2.5
6.	Karnataka	4.5	5.0
7.	Madhya Pradesh	7.2	8.7
8.	Maharashtra	22.9	18.1
9.	Delhi	3.9	2.7
10.	Odisha	2.1	2.4
11.	Punjab	2.8	2.2
12.	Rajasthan	3.0	3.2
13.	Tamil Nadu	8.1	8.9
14.	Uttar Pradesh	11.0	9.5
15.	West Bengal	8.9	9.8

Source: Handbook of Urban Statistics (2016), Ministry of Housing and Urban Affairs, Government of India.

efforts towards housing provisions, slum clearance and rehabilitation. The master planning approach endorsed during this time resulted in low- density urban settlements as land-man ratio was not alarming.

The next two decades initiated a significant departure in policy; from slum clearance to slum improvement and upgradation. Emphasis was given to balanced regional development and development of small and medium towns, while containing the growth of metropolitan cities, making land available for provisioning of services, housing for the urban poor, and control of land prices.

However, these initiatives were not successful in spreading urbanisation evenly. There was no networking among smaller towns and villages or with the next size class in order to make economic activities and social services mutually complementary in space. Bigger cities continued to have strong pull factors both in terms of economic and social opportunities and attracted migration from smaller towns, thereby creating both spatial and economic imbalance.

India's economic liberalisation from 1990's, impacted the urban sector also. Some key developments during this period included the opening-up of the sector to private participation, participatory approach in city planning, strengthening the link between urban growth and economic development and employment generation. The 73rd and 74th Constitutional Amendments (1993) introduced Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs) as constitutionally accepted third tier of administration in India. This further pushed the agenda for decentralisation seeking greater accountability for the ULBs and paving the way for state transfers and subsidy-based urban infrastructure financing regime to market-based financing regime.

Preparation of master plans and regional planning have been two major exercises that have evolved out of the planning process endorsed in India since Independence. The Indian urban reforms in the last decade have led to the emergence of City Development Plans (CDPs) as a product of JNNURM and UIDSSMT. While Master Plans continue to be the spatial planning tool with a set of Development Control Regulations (DCRs) enforced by the ULB/development authorities, CDPs stand as project-investment plans for cities, with minimal spatial reference.

The simultaneous existence and functioning of multiple plans result in a complex hierarchy and overlapping of institutional mandates, making implementation and enforcement of plans difficult. The lack of effective planning and land-use controls have encouraged sprawl in all Indian cities – mega, big and small. There is a need for the plans to

align with each other in time, space, and objectives, in order to ensure tangible benefits (Bhattacharya et al, 2015).

Twelfth Five-year Plan (2013-17) of India highlighted that vision of India's growth must be aligned with the objective of inclusion and sustainability. Good urbanisation ensures that cities and towns are free from slums and offer adequate opportunities for productive employment and a decent quality of life to all their inhabitants including the poor. Two major challenges of urbanisation in India, as recognised by the Twelfth Plan, are job creation and provision of basic services to urban citizens expected to be around 600 million by 2030.

Shortage of urban services is one of the major roadblocks to productivity, as estimated and projected by several committees including erstwhile Planning Commission, Municipal Finance Commissions, National Commission of Urbanisation (1988) and various Expert Committees constituted by the Ministry of Housing and Urban Affairs. The gap in financial resources for urban infrastructure under various expenditure norms varies from 32 to 90 per cent in case of urban local bodies. The SCM is emphasising on equitable cities that will generate financial resources through competition and Public-private Partnership (PPPs).

The Smart City Mission

The Smart Cities Mission (SCM) was launched by the Government of India in June 2015 to achieve urban transformation, drive economic initiatives and improve the quality of life of people by enabling local area development and harnessing technology. The Mission aims to focus on *Area-based Development* in the form of redevelopment of existing spaces (Brownfield) or the development shortlisted on the basis of a Smart Cities Proposal prepared by every city of new areas (Greenfield) to accommodate the growing urban population and ensure comprehensive planning to improve quality of life, create employment and enhance incomes for all - especially for the poor and the disadvantaged. The smart cities identified by the Ministry included capital cities, business and industrial centres, tourism and cultural centres, port cities and education and healthcare hubs. The cities have been identified based on strong economic base, attracting significant migration and creating huge slums. The total central budget for this mission is Rs. 48,000 crore and concerned states have been asked to generate the rest Rs. 48,000 crore. The central fund has been released to Urban Local Bodies (ULBs), provided they have completed their jobs as per plans. All the 100 cities have been identified and funds are released as per the Mission activities (Hoelscher, 2016; GOI 2015; PIB 2015).

It has been estimated that around Rs four lakh crore of funds will be infused mainly through private investments and loans from multilateral institutions among other sources, which amounts to 80 per cent of the total spending on the mission.

Understanding Smart City Guidelines

Three broad goals of Smart City guidelines are:

1. Improving the quality of life;
2. Attracting people and investments to the city; and
3. Setting virtuous cycle of growth and development.

On the basis of these goals, the smart city concept contains a wish list of infrastructure and services that meet the need and aspirations of its citizens.

The purpose of smart solutions is to enable local area development and harness technology especially that orients to smart outcome leading to economic growth and improved quality of life. Reducing inequality with use of Information Technology with GIS and MIS application is core to the Mission. E-governance and citizen participation are two basic planks of implementation.

SCM is about developing cities with ICT and use it as an enabler, not the end. Its strategy is not project based. It tries to converge with other missions for better financial and input risk management and mitigation. It emphasises on organisation and management of data for preparation of evidence driven planning. The city planning should consider incremental changes through an area-based approach rather than city wide regeneration that does not allow for learning through applications. The Mission throws big challenges to the cities to programme for alternative financing other than government transfers. The city can raise resources through property taxes, transfer of development rights in land, use of municipal bonds and the like. It encourages the cities to expedite financial reforms through intermediaries and institutional and governance reforms through Special Purpose Vehicle (SPV), of which, the Municipal Commissioner is a member.

Implementation of SCP

The government selected the smart cities in various stages over a span of two years from Jan 2016 to June 2018 depending on submission of city profiles and project plans by the states. After selection, it normally takes around 12 to 18 months to set up a Special Purpose Vehicle (SPVs),

appointment of a Project Management Consultant, prepare detailed project reports and award the work after tender. All the 100 selected cities have constituted SPVs, registered under the Companies Act 2013, City Level Advisory Forum and appointed Project Management Consultants.

Total projects under SCM are 5151 so far at various stages of completion. The time line for completion of smart city projects according to the rounds in which they were selected is reflected in Table 5. It is estimated that the Mission, when completed, will impact the lives of around 10 crore persons in urban areas.

TABLE 5: TIME LINE OF PROJECT COMPLETION FOR CITIES

<i>Selection Period</i>	<i>Number of Cities</i>	<i>Completion Year</i>
January 2016	20	2020 - 21
May 2016	13	2021 - 22
September 2016	27	2021 - 22
February 2017	30	2021 - 22
January 2018	10	2022 - 23

Source: Ministry of Housing and Urban Affairs, Government of India.

The projects are largely capital – intensive with completion time ranging from one to three years. It was slow to start with initially but has gain one billion (Rs. 100 crore) every year for five years with an equal contribution from the state government and ULBs together. Management of finance is with the SPV instead of through the ULBs.

Table 6 reflects the estimated investments of the Centre, states, ULBs including private sector investment over five years. Cities have

TABLE 6: PROPOSED INVESTMENT UNDER SCM – COMBINED

<i>S. No.</i>	<i>Components</i>	<i>Amount (Rs crore)</i>
1.	Total Investment	205018.00
1A.	Area – Based Development	164204.00 (80.8%)
A(a)	Retrofitting	131003.00
A(b)	Redevelopment	33001.00
1B.	Pan City Project	38914.00 (19.2%)
1C.	Contingency	1999.9

Source: MHUA Annual Report 2018 – 19, website: www.smartcity.in

Note: Contingency costs include preparation of DPR, hiring of consultants etc.

largely preferred retrofitting (80.32%), as compared to redevelopment (19.68%) in the Area – Based projects. Expenditure on Pan City projects is around 20 per cent of total project costs. Very few cities have chosen the Greenfield option as vacant land of 250 acres or more in the municipal area is difficult to obtain. Cities like Pune have argued that Greenfield is not an option if smart city model is to be replicated. Moreover, project cost of Greenfield development is also very high. The residents would like to prefer Brownfield development with a combination of retrofitting and redevelopment as the case may be, as this would directly benefit them. Completed projects include Integrated Command and Control Centres, roads, water supply, Solar rooftop and vibrant public places (Sarkar et al, 2016).

Table 7 shows that the states depend substantially on the PPP model to finance the capital investment. They have to include financial innovation to encourage PPP, whose contribution is expected to be almost equal to convergence funding. Dependence on borrowing from external agencies like the World Bank, ADB is moderate while contributions from the beneficiaries (included in others) are expected to be more than double the loan amount.

TABLE 7: SOURCES OF FUNDING FOR SMART CITIES

<i>Sources</i>	<i>Amount (Rs. crore)</i>
Central and State Governments	93,552.00 (45%)
Convergence Funds from other Programmes	42,028.00 (21%)
Funds from PPP	41,022.00 (21%)
Loans from World Bank, ADB, etc.	9,843.00 (4%)
Other Sources	19,073.00 (9%)
Total	2,05,018.00 (100%)

Source: MoHUA Annual Report 2018-19.

Progress of Smart City Mission

The SCM is a basically capital investment project that takes long time to plan, finance and execute. The process of tendering and issuing work orders is also time consuming. Table 8 reveals that only around seven per cent of the estimated project cost has been realised in four years of launching the SCM.

There has not been satisfactory flow of funds from the PPP model also.

TABLE 8: STATE OF THE PROJECTS UNDER SCM (TILL 11.04.2019)

<i>Components</i>	<i>Value (Rs. Crore)</i>
Total Expected Project Cost	2,05,018.00 (100%)
Tendered Projects	1,31,892.00 (64.33%)
Work Order Issued	72,524.00 (35.37%)
Completed Projects	14,324.00 (6.98%)

Source: www.smartnet.in

Table 9 reveals that 60 out of 100 cities have opted for both affordable housing and large infrastructure projects. Only 19 cities have found projects with PPP funding with moderate amount. SCM put significant emphasis on use of technology and e-governance, but only 20 cities have shown interest in APP based solutions. Objectives of the SCM remain largely unachievable even after four years of launching.

TABLE 9: TYPES OF PROJECTS SUBMITTED BY THE CITIES (TILL 11.04.2019)

<i>Cities (Number)</i>	<i>Type of Projects</i>	<i>Project Cost (Rs. crore)</i>
60	Affordable Housing	17, 035.95
19	PPP Project	4,207.71
20	APP based Solutions	780.60
60	Large Infrastructure Projects (> Rs. 100 crore)	1,96715.74

Source: www.smartnet.in

Among the 60 cities who submitted projects for affordable housing with total project cost of Rs. 17,035.95 (Table 9), only 15 cities have actually focused on housing for the poor at the total cost of Rs. 8438.4 (49.53%), though all these cities have significant proportion of slum population. The rest of the projects under this category are basically infrastructure projects, not necessarily for the slum area. PPP funding is available for only two cities (Gwalior and Surat), that too in very moderate amount. Thane is the only city spending substantially on affordable housing. It seems competitive, rather inclusive component is becoming more prominent in SCPs.

Challenges for the SCM

Competitiveness and inclusiveness are two major pillars of SCM. Competitiveness depends on the long-term productivity of a region. A competitive city is a city that successfully facilitates its firms and industries to create jobs, raise productivity, and increase incomes of its

TABLE 10: AFFORDABLE HOUSING (TILL 11.04.2019)

<i>City</i>	<i>Type of Project</i>	<i>Project Cost (Rs. in crore)</i>
Ujjain	Affordable Housing	478.84
Vadodara	Slum Housing	260.00
Thane	Inclusive Housing	3974.00
Gwalior (PPP)	Inclusive Housing	294.88
Hubli-Dharwad	Affordable Housing	103.32
Agra	In-situ Housing Upgradation	114.30
Dharamshala	Beneficiary-led Housing, Shelter for the Homeless	219.30
Kakinada	Affordable Housing	153.60
Indore	Slum Housing	232.76
Ahmedabad	Slum Redevelopment	576.00
Kochi	Integrated Development of Slum Housing	141.40
Surat (PPP)	Affordable Housing	700.00
Bhubaneswar	Slum Redevelopment	840.00
Rourkela	Integrated Informal Settlement	280.00
Total	Affordable Housing	8438.4

Source: www.smartnet.in

citizens over time. The Mission aims at some major factors to increase economic potentials of the city.

- (a) *Population*: It has a direct bearing on its level of competitiveness. Big Indian cities are the most competitive ones too. Population acts as an active resource (as a factor of production) and positively impacts the competitiveness of a city. Competitive cities, on the other hand, tend to be more attractive in providing different kinds of jobs and other facilities, thereby becoming a strong pull factor for the migrants. SCM emphasises on providing the residents a better quality of life for reducing inequality and increasing productivity.

However, a large population is not always a boon. It creates challenges pertaining to the movement of people and goods and in the provision of basic services. SCM tries to respond to such problems by improving service delivery and spending on infrastructure. Competitive cities have operational

metro rail networks and some of the best hospitals and airports in the country. These factors significantly impact the competitiveness of cities. Recent report of NFHS 5 (2018) has established that national population growth has come down below the reproduction level. However local challenges remain and regional imbalance cannot be ignored. Can Smart City survive without Smart village?

- (b) *Education:* This is substantially higher in competitive cities compared to the national average. This helps improve the demand conditions with better awareness, thus adding to their competitiveness levels. Presence of quality educational institutions in the big cities helps them attract the best talent from all over the country. This coupled with job opportunities they offer, help them retain such talent. The presence of such diverse talent helps in sustaining the growth, productivity, and economy of these cities. Sound financial infrastructure and relatively higher financial literacy levels further add to their competitiveness and skill development. However, increasing proportion of youth unemployment in the cities is reflection of inadequate skill development to avail decent jobs. The emphasis on physical infrastructure in the SCM is not enough to address this issue (Dev et al, 2011).
- (c) *Environmental conditions:* This factor has a strong influence on the competitiveness of a city by affecting its labour productivity. While other big cities like Mumbai, Kolkata, Chennai, and Hyderabad have managed to retain their competitiveness levels, Delhi has witnessed a drop in competitiveness mainly because of its worsening environmental landscape. SCM tries to address this issue through extensive IT applications, adopted in area based and pan city developments. But, as is evident in Delhi's case, focus on selected areas has not been helping the national capital to overcome the environmental challenges (Economic Survey of Delhi – 2020-21).
- (d) *Level of industrialisation:* The positive industrial environment improves the competitiveness of its cities. In India, most of the highly competitive cities belong to a small group of industrialised states (including Maharashtra, Tamil Nadu, Gujarat and Karnataka) while the least competitive cities belong to less industrialised states like Jharkhand, Bihar, Chhattisgarh, Jammu and Kashmir, etc. In other words, industrialisation as a policy tool is required to make cities

from less industrialised states more competitive. SCM has tried to address this issue by selecting the smart cities from less industrial states also. In fact, the number of cities chosen from less industrial states of UP and Bihar is very high. SCM tries to create several growth centres to distribute the fruits of development widely. But the linkage to regional development is still very weak.

- (e) *Water supply and sanitation*: This factor is positively correlated with competitiveness. Cities from the state of Madhya Pradesh, which have shown exceptional cleanliness performance of late, have seen a rise in their competitiveness levels. Tier 2 and Tier 3 cities like Chandigarh, Vadodara, Coimbatore, Surat, Mysore, and Rajkot have witnessed a similar fate. Big cities like Delhi, Bengaluru, and Chennai have not performed well on this front. Massive population, urban sprawl and limited public infrastructure are the possible reasons. SCM encourages to emphasise on these aspects through convergence with other urban programmes.

In the short run, some cities may witness substantial improvements in their competitiveness levels. This may be because of improvement in their factor conditions and demand conditions. But in order to sustain or further improve their competitiveness levels, they must prepare proper strategy and related and supporting economic momentum, which cannot be increased overnight. So, the policymakers in the less industrialised states should look at industrialisation as a long-term solution to make their cities more competitive. SCM provides the opportunity to create long-term capital goods to help competitiveness.

Our cities have focused only on a few parameters of development and have ignored the others. For instance, despite being the most competitive cities in the country, the performance of big cities on certain parameters (such as environment, cleanliness, administration, etc.) is not up to the mark.

This probably signifies a lack of clear vision, and an integrated development agenda. Planning and development should take place with a clear set of priorities. One of the ways to tackle the problem at hand would be to strengthen municipalities by giving them more political and financial powers. China which has some of the world's most competitive cities owes its success to such devolution of power. Participation of local population in planning and development process is another important aspect which is ignored in India. How India strengthens its cities will determine the strength of India's growth story in the future.

Creating a smart city is not just about creating the physical infrastructure – roads, clean water, power and transport that India finds difficult to deliver to its citizens seven decades after Independence. It is hoped that PPPs need to work. The big challenge will be to create self-sustaining cities, which create jobs, use resources wisely and also train people. This also means more autonomy for these cities.

Inclusiveness

It is observed that the process of urbanisation has been top – heavy in India, with metro cities gaining in population share, even though growth rate of population in the metros declined steadily since 1991. Concentration of population in metro cities has resulted in growing income differences as well. The estimated average monthly per capita income of the metropolitan cities was two times more than that of all India in 2011. The jobless growth symptom has mostly affected the smaller cities. The average WPR across metropolitan cities increased marginally while it declined in other smaller cities (population between 100,000 and 500,000). The metropolitan India offered wages higher than that of both non – metros and urban India.

Moreover, wages in non-metro cities are lower than that in urban areas. These cities also witnessed informalisation and casualisation of labour in greater proportion. Metropolitan cities witnessed a higher service sector induced income growth compared to the non-metro cities. Income inequality (measured by the ratio of average monthly per capita expenditure of the topmost and lowest decile class) is much lower in the metro cities compared to urban India as a whole (NIUA 2017).

Access to basic services is strongly correlated with size class of cities. Naturally, provision of civic services like potable drinking water, toilet facilities, drainage facilities and electricity are much better in larger cities compared to the smaller towns.

On the other hand, metro (38.9%) and non – metro (34.7%) cities account for around three – fourth of India's total slum population. About one – third residents of metro cities live in one room accommodation, thereby reflecting serious housing congestion. Environmental challenges in terms of vehicular, industrial and atmosphere pollutions are most acute in metro cities.

In this background, it is apprehended that huge investments in smart cities may increase the inequality between metro cities and urban India and consequently the rest of India with unequal distribution of basic resources. In the SCM, there are 35 metro cities, 58 non – metro cities and seven smaller towns. Bulk of investments is earmarked for

the cities which are already contributing to increasing inequality. It is quite likely that such investments will increase migration, leading to more deprivation of smaller towns. Unless, benefits of the smart cities are spilled over to the neighbouring areas, the intended inclusive mission may result in exclusion of economically weaker sections of the cities as well as the rest of India. There are other areas of exclusions as well.

Undermining Participation of the ULBs

Design of smart cities, on the line of some international models, is based on the culture of competition and institutional restructuring. It rests on three major planks: technology, private governance and efficiency. It is relevant here to mention two major urban reform programmes, JNNURM, launched in 2005 and creation of Special Economic Zones (SEZs) through an Act in 2006. Project management was operationalised in the former programme through parastatal agencies in a number of cities. As a result, ULBs were not involved in city management in any significant way and the seven-year span of JNNURM did not result in capacity building of ULBs except for large municipal corporations. SEZs also are managed by non – elected directors with no obligation to the ULBs and cutting through the financial resources of the local bodies as they do not pay any local taxes. The selection criteria of smart cities puts significant emphasis on ABD, rather than on development of a new city. Only Navi Mumbai and Rajkot have prepared the projects on Greenfield development. Economic and political realities are quite challenging especially in case of land acquisition and financing. ABDs are within the municipal limits and these problems can be avoided. The top 60 cities that are ahead in terms of project planning and preparation have placed around 80 per cent of the budgeted investment on a particular area. However, the ULBs are not responsible for development controls. Any developmental activity in the municipal areas is likely to attract migration, both floating and regular. This will create pressure on the ULBs to increase the supply of services, for which they may not be capable. The SCM is not explicit about capacity expansion of the ULBs. The 74th Constitutional Amendment (1994) empowered the local bodies to be the third tier of administration. But except for some larger corporations, the states have not devolved adequate financial and administrative powers to the local bodies to increase their capabilities. The SCM is for enriching the cities without enriching the local bodies. City development cannot be sustainable without active involvement of local bodies.

Citizen Participation

Citizen participation is a major step in shaping goals and vision for the

city. It is one important selection criterion as well. However, the Central government, very rightly, did not set any model of participation. The states could take recourse to citizen participation through digital mode or non-digital mode. The cities concerned have used this instrument in varying degrees. They have used online surveys, direct surveys, ward level meetings and through citizens representatives. But it is not very clear to what extent, slum population was directly contacted. The Mission aims at alleviating poverty, but the ABDs are not chosen on the criteria of deprivation as per demographic and socio-economic data. Only a few cities like Pune selected the areas for development depending on population density. Others depended more on expert groups and other stakeholders to identify areas for development (Sarkar et al, 2016). Economic potentiality was one important criterion for choice as keeping resource generation in mind. Online participation is not necessarily inclusive as there is a possibility of digital divide. Disseminating information via digital technology does not reach all owing to a number of hurdles including lack of digital education and inadequate digital infrastructure, despite a relatively high penetration rate. Cities are trying to be competitive. They try to create infrastructure that will increase land values to make the projects viable. This stands in the way of in-situ developments of slums despite clear court order in favour of such development. For example, NDMC wants to relocate the encroachers outside the municipal boundary. It has selected the New Delhi City Centre with area of approximately 550 acres for undertaking retrofitting model of development based on stakeholder consultation and desk research to transform the area as a World Class Urban Area. But it has no plan to estimate the job prospects of the poor encroachers or their inclusion in the municipal area converging with the development plan. It is also not clear whether the massive financial resources generated from this redevelopment programme will be diverted to alleviate local poverty. Evidently, citizen participation is not all inclusive as economic development is not aligned with human development.

External Consultants and Local Concerns

External consultants often represent ideas generated in the international models and act as advocates of foreign technologies. SCM is a gateway for internationally and nationally reputed firms and some local companies who offer their services at very cheap rate. Some of these associations with cities are continuing for long. DFID, JICA and GIS have invested heavily in urban infrastructure in India and supporting many cities. SCM has accelerated this process and is encouraging adoption of international PPP model (SCM website, 2019). Sometimes, it hurts the local participatory process and leads to social tension (Cardullo

et al, 2018). In Dharamshala, the residents raised serious objections about lack of information related to ABD and said the selected zone will lead to environmental hazards. In Bhopal, the launch of an urban renewal programme led to eviction of residents and they complained that there was no real public consultation. The cities like Pune, which are able to develop their own vision with effective local participation and better qualified municipal service professionals, have been able to go for project implementation without social tension.

Smart City Mission relies heavily on ICT application as smart solutions to urban issues. The cities have shown significant variations in proportion of IT solutions in sectors like water (40%), energy (35%), transport (25%) and sanitation (15%). Investments are majorly directed towards road construction, parking areas and multimodal transport hubs in the transport sector, even though SCM puts emphasis on integrated traffic management system based on ICT. Evidently, there is a deviation between the policy objective and way of implementation by the cities. The complexity of technical issues may be quite challenging with the existing human resources and skill gaps at the local level. The cities have classified this as one of the risk factors in project implementation. This calls for widespread training for the local staff to handle ICT but the cities have allocated very low (0.2% of total project budget) for their training. This explains why relatively much lower percentage of project budgets is allocated to ICT as compared to physical infrastructure. This situation provokes the cities to rely on outside experts through PPP with adequate funding available on one hand. On the other hand, the gap in local capacity building increases thereby excluding local human resources to be effectively involved in city development. Extensive ICT application that aims at reducing inequality in service delivery, itself has become a source of inequality in absence of adequate local skill and necessary ICT infrastructure. Recent experience in online education during pandemic is a glaring example of such inequality. This is a formidable challenge towards success of the SCM.

CONCLUSION

Sustainable cities need to create a balance between environment and development. On the one hand, infrastructure like road, power, transport, healthcare, education and the like are imperative for pan city development to reduce spatial inequality and improve quality of life in general. On the other hand, environment and ecological concerns need to be part of conscious economic and spatial planning so that development does not go out of control. The Central government has enacted several environmental legislations that need to be incorporated in the basic

planning framework itself. The regulations like the EIA Notification 2006 and its Amendments, the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Noise Pollution (Regulation and Control) Rules, 2000, Solid Waste Management Rules, 2016, E-Waste (Management and Handling) Rules, 2016 and its Amendments, Plastic Waste Management Rules 2016 and its Amendments, Waste Management Rules, 2016 should be followed at every stage of city planning and no project should be approved without clearance from the concerned regulatory authorities.

Energy efficiency with Green building and Green transport norms have become a major area of concern. There are examples of Solar City projects as models of sustainable development. India has committed zero net greenhouse gas emissions by 2070 in CoP26 Climate Summit in Glasgow. Sustainable city planning should keep this objective in mind in order to achieve the goals of sustainable development.

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Structuring of Water Policies in India: An Overview and Way Forward

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ABSTRACT

Growing contestation on the policy reforms and implementation is quite significant in the last few years. Diverse narratives related to water policy reforms and discourses have achieved considerable scholarly attention. These narratives vary from water rights, challenges of groundwater management, access to clean water and sanitation, gender equity for access to water and sanitation, integrated water resource management to inter-state river management. Adding to the global agenda of water security, climatic change has given a new dimension to the discussion. Availability of freshwater has been severely hit by natural disasters leading to water scarcity in major parts of the world. Therefore, to handle the scenario wisely, the focus of the current water management reform relies on efficient policymaking to strengthen the overall water governance, water planning and water management. This research explores the structuring of the water policies in India focusing on the components of existing National Water Policies.

Keywords: Water Policy, National Water Policy, Policy Implementation.

INTRODUCTION

Discussions on the role of public policy have attained tremendous improvement in the last five decades. Further exploration towards evidence-based and behavioral economies can raise the bar to achieve effective policymaking (Hassel, 2015). Policies in water resource management can be understood as the dynamic outcomes achieved from public-private interactions at different layers and scales through

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some timeline (Delft, 2021). The immunity of the water sector towards various socio-economic-environmental uncertainties is not significantly evident; therefore policymaking in water resource management has to be handled rationally and efficiently by the water sector decision-makers to cope up with present scenario (Biswas, 2001).

Water scarcity and its mismanagement is a serious concern worldwide (Sulyova, Vodak, and Kubina, 2021). Physical scarcity of water persists in many parts of India but there are many cities and towns which suffer due to the mismanagement of water resources. The uniqueness of decision-making in water resources lies in its diverse nature and interdependence with other resources. Hence, attaining equilibrium in water governance with multiple actors and institutions makes it a more complex and challenging phenomenon (OECD, 2016). Therefore, effective policymaking could be seen as one of the key principles to unfold the enigma of good governance.

In this paper, the focus is on underlining the shift required from conventional policymaking to utilitarian reforms. There are sections to discuss the current structuring of the water policies in India, theories of policy institutions (Saleth and Dinar, 2004) adapted to establish the limitations of current policies and highlight the potential interventions. This paper is based on a preliminary analysis of the aspects drawn from the literature and successful examples. A major focus is on the National Water Policies and some examples from the National Capital Territory of Delhi (NCTD) to understand the policy translation from top to bottom.

Background

Water policy in India is constantly evolving in synchronization with the global agendas for water security, sanitation and climate change. However, the struggle continues as the Central and state water institutions recommence to have inconsistent, inefficient, sub-standard, and overlapping policies. Water policies in India are also found to be un-implementable in cases such as groundwater rights, metering tube wells, etc. (Shah and Koppen, 2006). The formation of water policy involves various authorities changing with political boundaries of districts, regions, states, etc. on one hand as well as hydrogeological boundaries like basins, sub-basins, and catchments, etc. on the other hand. The implementations of water policy become difficult due to such boundaries and administrative overlapping. Deficiency of common framework and focused understanding of goals are some of the familiar reasons for having an inconsistent water policy structure. Another critical reason for the policy being inefficient is the lack of disaggregation and aggregation in data throughout the institutions. Sometimes data is

referred to by different institutions are found to be contradictory (Cronin et al., 2016). The same implies to river basin management, different water institutions use different data, and planning and managing any river basin with reliance becomes difficult. Coordination between different departments such as the Ministry of Water Resources, Rural Development, Agriculture and Urban Development, etc. at the Centre and states make it even more exhausting. The economy is another leading factor in water governance and a significant reason for ‘push and pulls’ in the policy cycle.

Box-1 indexes the brief of major events in water policy, water planning and management in India in chronology. The series of water policies and programmes provide evidence of the active role of the Indian government in the water sector, however, the challenges seem to grow with the passage of time.

India was among the first countries to have the National Water Policy (NWP) in 1987. Water policy in India was formulated by the Ministry of Water Resources in 1985 which later on became the Ministry of Water Resources, River Development, and Ganga Rejuvenation in 2014. Now it has been replaced by ‘Ministry of Jal Shakti’¹ (Jal Shakti Mantralaya) on 14th June 2019. Ministry of Jal Shakti currently works on two separate departments called Department of Water Resources, River Development, and Ganga Rejuvenation also known as ‘*Jal Sansadhan, Nadi Vikas Aur Ganga Sanrakshan Vibhag*’ and another as Department of Drinking Water and Sanitation also known as ‘*Peya Jal Aur Swachhata Vibhag*’ which was earlier called as Ministry of Drinking Water and Sanitation formed in 2011.

The making of NWP’s in India involves federal government setup aggregating contributions from bureaucrats of several divisions and public leaders. The first National Water Policy (NWP) was adopted in 1987 which got updated in 2002 and later revised in 2012 (Fig. 1). It was more than 30 years after the first NWP came in 1987, but unfortunately,

Fig. 1: Chronology of the existing water policies



Source: Authors

Box-1: Chronology of events related to water provisions in Post-Independent India

1947: Central Water Commission was established under the name of Central Waterways, Irrigation and Navigation Commission, generally known as CWINC and it was stated that: The Commission will act generally as a Central fact-finding, planning and coordinating organisation with the authority to undertake construction work.

1949: The Environment Hygiene Committee in 1949 recommended the provision of safe drinking water supply to cover 90 percent of India 's population for coming 40 years.

1950: The Constitution of India gave ownership of all water resources to the government, specifying it as a state subject, giving citizens the right to drinking water.

1951-56: First Five-Year Plan: Water supply and sanitation was added to the national agenda with sanitation first time mentioned under water supply.

1954: First National Water Supply and Sanitation Programme was launched as a part of health plan.

1956-61: Second Five-Year Plan: Water supply sector was not given much priority in this Plan, but funding was provided to Public Health Engineering Departments (PHEDs).

1956: Amendment of interstate water disputes.

1961-66: Third Five-Year Plan: 'Problem Villages' were identified as those without drinking water source within distance of 1.6 kilometers in the plains or an altitude of 100 meters in hill areas, those endemic to water-borne diseases and those where water sources contain excess salinity, iron, fluoride or toxic elements.

1968: States were given financial authority to sanction rural water supply schemes, which were expanded to include settlements with population less than 20,000. Priority was given to villages with acute scarcity of drinking water.

1969: National Rural Drinking Water Supply Program was launched with technical support from United Nations International Children 's Emergency Fund (UNICEF).

1972 -73: Accelerated Rural Water Supply Programme (ARWSP) was launched by the Government of India to assist States and Union Territories to accelerate the coverage of drinking water.

1975: ARWSP was replaced by the 20 Point Minimum Needs Programme (MNP) which aimed at full coverage of population with safe drinking water.

1977-78: ARWSP was reintroduced, but funds were provided by the states through MNP.

1980-85: Sixth Five-Year Plan: Importance was given to the water supply sector in keeping with the UN de Mar del Plata declaration of March 1977 about the International Decade of Drinking Water Supply and Sanitation from 1981-90.

1981: India as a party to the International Drinking Water Supply and Sanitation Decade (1981-1990) declaration had set up a national level apex committee to define policies to achieve the goal of providing safe drinking water to all villages.

1985: Rural Water Supply and Sanitation, which was under the Ministry of Urban Affairs and Employment, was handed over to the Department of Rural Development, then under the Ministry of Agriculture.

1986: National Drinking Water Mission (NDWM) was launched in 1986 with following objectives: a) Providing safe drinking water to all villages; b) Assisting local communities to maintain sources of safe drinking water in good condition; and c) Giving special attention for water supply to Scheduled Castes and Scheduled Tribes.

1987: National Water Policy (NWP) was drafted for the first time by the Ministry of Water Resource with an emphasis on domestic water supply, protection of groundwater sources and water quality monitoring and mapping. Drinking water was given first priority under this policy.

1991: National Drinking Water Mission (NDWM) 1986 became Rajiv Gandhi National Drinking Water Mission (RGNDWM).

1992: 74th Constitutional Amendment Act was passed in 1992 to create Urban Local Bodies (ULBs) to be known as Municipal Corporations, Municipal Councils and Nagar Panchayats and local bodies are assigned with the planning and management of water within their jurisdiction.

1993: Accelerated Urban Water Supply Programme (AUWSP) was launched in 1993 to provide safe and adequate water supply facilities to the entire population of the towns having population less than 20000 as per 1991 Census.

1994-95: Mega-city schemes were launched for five metro-cities.

1994: Panchayati Raj Institutions (PRIs) were assigned the responsibility of providing drinking water as per the provisions of the 73rd Constitutional Amendment.

1992-97: Eight Five-Year Plan: Problems with the water supply sector were identified and reform agenda was put forward. Emphasis was placed on treating water as a commodity.

1994: Sector Reform Pilot Project (SRPP) was launched in 1994 giving a new approach to the water supply, operationalizing the decentralized delivery of water services by focusing primarily on village level water supply management. The role of the government was envisaged to change from service provider to facilitator. Sector reform projects were introduced in 67 districts across the country on pilot basis.

1997-2002: Ninth Five-Year Plan: The objective of Ninth Plan was to provide 100 per cent water supply coverage in urban and rural areas, 60 per cent sanitation coverage in urban areas and 30 per cent in rural areas. Emphasis was placed on decentralisation and privatisation, both in rural and urban sectors.

2002: RGNDWM scaled up the Sector Reform Pilot Project to the whole country in the form of Swajaldhara Programme for National Drinking Water Supply.

NWP 2002: was revised to accord priority to villages that did not have adequate sources of safe water and to improve the level of service for villages classified as only partially covered. India committed itself to the Millennium Development Goals (MDGs).

2002-07: Tenth Five-Year Plan: The objectives of Ttenth Plan were 100 per cent coverage of urban and rural population, water to be managed as a commodity, change in the role of government from direct service provider to facilitator, leading to privatization.

2003: Provision of Urban Amenities in Rural Areas (PURA): The objective of the scheme is to provide urban amenities and livelihood opportunities in rural

areas to bridge the rural-urban divide, thereby reducing migration from rural to urban areas.

2004: All drinking water programmes were brought under the umbrella of the RGNDWM.

2005: Bharat Nirman Programme (BNP), a five-year Programme to build rural infrastructure, of which drinking water supply was one of six components.

2007: Pattern of funding under the *Swajal dhara* scheme changes from the previous 90:10 Central-community share to 50:50 Centre-State shares. Community contribution was optional.

2007-12: Eleventh Five-Year Plan: The objective of eleventh plan was to cover 63 cities and 5098 towns to be covered under the JNNURM and UIDSSMT programmes, so as to provide adequate drinking water to the people. The approach paper for the Eleventh Five-Year Plan called for a comprehensive approach which encompassed individual health care, public health, sanitation, clean drinking water, access to food and knowledge about hygiene and feeding practice.

2008: National Action Plan for Climate Change (NAPCC) is a Programme launched to mitigate and adapt to the adverse impact of climate change. The action plan was launched with 8 sub-missions. National Water Mission, is one of the eight missions.

2009: Volume I and Volume II launched for the revised Comprehensive National Water Mission under National Action Plan on Climate Change by the Ministry of Water Resources.

2010: Department of Drinking Water Supply was renamed as Department of Drinking Water and Sanitation.

2011: Department of Drinking Water and Sanitation upgraded as separate Ministry of Drinking Water and Sanitation.

2012: Draft NWP 2002 was updated to NWP 2012 and drinking water was given utmost priority.

2012-17: Twelfth Five-Year Plan: The reform agenda for Twelfth Plan has five major thrust areas. It is proposed in the Plan that investments in water supply will focus on demand management, reducing intra-city inequity and on quality of water supplied. The other agenda is to protect the water bodies of each city and to build the infrastructure to enhance the water supply.

2012: Dam Rehabilitation and Improvement Project (DRIP): Ministry of Water Resources, River Development and Ganga Rejuvenation through Central Water Commission with an objective to improve safety and operational performance of selected dams.

2014: Namami Gange Programme: is an Integrated Conservation Mission approved as 'Flagship Programme' by the Union Government to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River Ganga.

2015: Pradhan Mantri Krishi Sinchai Yojana (PMKSY): *Har Khet Ko Pani* (HKKP) was a national mission to improve farm productivity and ensure better utilization of the resources in the country.

2016: Model Bill for the Conservation, Protection, Regulation and Management of Groundwater: An Act to restore and ensure groundwater security through

availability of sufficient quantity and appropriate quality of groundwater to all stakeholders in rural and urban areas.

2016: Draft National Water Framework Bill: The Committee was formed by the Ministry of Water Resources, River Development and Ganga Rejuvenation. The objective behind framing of this bill was to conserve, manage, protect and regulate the use of water.

2018: Hydro-Meteorological Data Dissemination Policy, 2018 has been formulated by this Ministry which deals with the issue of dissemination of hydro-meteorological data collected by CWC and CGWB, classification of hydro-meteorological data, Data User Categories, custodian of hydro-meteorological data and procedure for release of classified & unclassified hydro-meteorological data.

2019: Jal Jeevan Mission: is envisioned to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India.

2019: Atal Bhujal Yojana is a groundwater management scheme launched to improve groundwater management in seven states of India.

2021: launched of the 'Jal Shakti Abhiyan: Catch the Rain' campaign on March 22, 2021 with the tagline "Catch the rain, where it falls, when it falls" on the occasion of World Water Day for conserving water.

2021: Har Ghar Nal Ka Jal (tap water in every home): Scheme for piped water supply to all is under *Jal Jeevan Mission* aims to provide adequate water supply to all households and to conserve water sources.

Source: Updated till November 2021, Compiled by the authors.

these policies were far from helping India to achieve water security (Pandit and Biswas, 2019). The prime objective of the current policy is to manage water resources with efficiency via promoting optimal, equitable, and economical usage of water (Ministry of Water Resources, 2012). It draws attention to the prime objectives of the National Water Mission 2008 (Ministry of Water Resources, 2018).

The water allocation priority has been given importance for drinking water in all water policies. Additionally, there is an attempt to look into water use efficiency, equity, and sustainability in all NWP but less emphasis has been given on the instruments to achieve them. For example, in the last section of NWP 2012 there are two policy statements under implementation of NWP (stated below) which has an accountable vision to be adopted. But there are no traces found on the preparation of the 'plan of action' for regular monitoring as suggested nor state policies reflect on unified perspective.

"16. IMPLEMENTATION OF NATIONAL WATER POLICY

16.1 National Water Board should prepare a plan of action based on the National Water Policy, as approved by the National Water Resources Council, and to regularly monitor its implementation.

16.2 The State Water Policies may need to be drafted/revised in accordance with this policy keeping in mind the basic concerns and principles as also a unified national perspective."

In 2015, a committee of seven members formed on the restructuring of the Central Water Commission (CWC), functioning since 1947, and Central Ground Water Board (CGWB) functioning since 1971, suggested a united body called National Water Commission (NWC) (Shah, 2016). Some of the objectives of the report were to pass Participatory Irrigation Management (PIM) Act, to bridge the gap between Irrigation Potential Utilised (IPU) and the Irrigation Potential Created (IPC), to empower Water Users Associations (WUAs), to promote participatory groundwater management, strategic planning at river-basins level, etc. The report was criticised for being voiceless on challenges of allocation of water in different sectors, rules for allocation, enforcement, performance checks, etc. at the basin level. It came out to be fragmentary on reinventing institutional and economic reforms. The report also called out for discussing the 'organizational reform' then the 'institutional reform' (Kumar, et al., 2016).

Methodology

The first section of the research contributes to the evaluation of all three versions of existing National Water Policies 1987, 2002, and 2012. Evaluation is based on the theory of 'Water Institution Decomposition'. Components indicated and unfolded are water law, water policy, and water administration. Pre-dominant objectives of the policies are compared to the sub-components of water institutions demonstrating the degree of inclusivity. This critical evaluation has been used to trace the ingredient imbalance in the current water policy structure.

The second section of the paper highlights the trend in the policymaking process. Based on the literature review, the most common steps involved in policy making process are taken into account to evaluate the current stages adopted by water institutions in India. For ease of understanding, the stages are clubbed into two categories 'Problem analysis' and 'Solution analyses'. This section provides a quick overview of the traditional yet evolving trend in the policy process.

The concluding section summarizes the need for relooking into the current water policy structure. Based on observatory analysis in the result and discussion section, it provides with few basic yet significant steps to be considered during the process of preparation of water policies. This section also emphasizes the importance of policy efficiency to achieve a water-secure future.

ANALYSIS, RESULTS AND DISCUSSIONS

Section-1: For a better understanding of effective policymaking, the concept of water institution has been elaborated in this section. 'Water institution' can be decomposed into three components: Water Law, Water Policy, and Water Administration (Saleth and Dinar, 2004). The components have a few parameters based on legal, political, and administrative aspects such as legal accountability of sector officials, economy, poverty and water, organizational balance, functional balance, etc. On the assessment of existing policies based on these parameters, it was found apparently that NWP 1987, NWP 2002, and NWP 2012 lack in 'Water Law' component of water institution, resulting in weak legal strength, whereas it reasonably qualifies for 'Water Policy' losing out on a significant portion of 'Water Administration'. The existing water policies have been relooked on the basis of some of identified evaluated components. Few important components which demand urgent considerations are legal accountability and interlinking of multi-sectoral policies. The analyses of the policies based on the identified components are explained in Table 1.

Acknowledging water resources as a state subject in India, the state has the liberty to draw its strategies based on the functions required within their boundaries; it may or may not agree to adopt the principles of national policies directly. For example, in the case of the National Capital Territory of Delhi (NCTD), the procurement of water in Delhi is governed by Delhi Jal Board formed in 1998 under the 'Delhi Water Board Act by Delhi Legislative Assembly. So, the provision of water supply and sanitation is solely the responsibility of the Delhi Jal Board. Delhi does not own any approved water policy till now but has four versions of "Draft Water Policy for Delhi" which came in 2012, 2016, 2017, and 2018, respectively. The Draft Water Policy for Delhi (WPD) was initiated by Delhi Jal Board and undertaken by the experts from the Natural Heritage division of 'The Indian National Trust for Art and Cultural Heritage (INTACH). The prime objectives of the WPD 2018 were based on five principles like: (i) Demand Management, (ii) Optimization of available resources, (iii) Recycling, (iv) Augmentation of internal resources and building resilience to climate change and (v) Equity (Delhi Jal Board, 2016). WPD in similarity to the NWPs found to be providing over ambitious statements such as achieving minimum 80% of recycled water by 2027. Successful examples are exhibited from the countries managing their water resource very efficiently such as Singapore, Israel, Western Australia, etc. which is appreciated but it is notable that our country's context and challenges are way different from others. Hence we see the translation of objectives from the national water

TABLE 1: EVALUATION OF NATIONAL WATER POLICIES BASED ON IDENTIFIED COMPONENTS. (ADOPTED FROM SALETH AND DINAR, 2004).

Components	National Water Policy 1987	National Water Policy 2002	National Water Policy 2012
Legal:	Water Law		
Distinction of water sources, accountability of sector officials, scope for private and user participation; Framework for integrated use of water sources.	• No intervention based on legal distinction of sources. • Surface water property rights or accountability of water sector officials have been discussed. • No legal definition for private-user participation. • No framework for integrated use of water sources.		• Proposed need for ‘Water Framework Law’ to govern the exercise of legislative or executive powers by the Centre, States and local governing bodies. • Acts modification is proposed for regulation of ground water. • Proposed need for comprehensive legislation for optimum development of inter-state rivers and river valleys to facilitate inter-state coordination.
	Water Policy		
Project selection criteria, Linkages within Law and Policy and with other policies	• Project criteria based on Environment Impact Assessment (EIA), Social Impact Assessment (SIA), rehabilitation of disadvantaged groups has been encouraged. • No direct link within law and policy and other policies. • Close integration of water use and land use policies has been suggested.		
Economy: Pricing, funds, private sector and user participation, poverty and water	• Water rates to be allocated to promote economic use with regard to the interest of small and marginal farmers. • Participation of farmers and voluntary agencies in management of distribution and collection of water rates in irrigation. • No direct subsidies on water rates to the poor but provisions related to project planning in favour of disadvantaged	• Participation of beneficiary and stakeholders. • Fixing of rates to be linked with the quality of service provided to ensure financial sustainability. • To develop innovative ideas, corporate management improving service efficiency and accountability to users. • Private Sector Participation has been encouraged. • Promoting participatory approach by involving stakeholders	• Provisions included from NWP 1987 and 2002. • Pricing of water should ensure its efficient use and reward conservation. • Equitable access to water for all and its fair pricing, for drinking and other uses such as sanitation, agricultural and industrial, should be arrived at through independent statutory. • Allocation and pricing on economic principles to be utilized more gainfully. • Statutory powers to be given to Water Users Associations to collect and retain portion of water charges, manage quantum and maintain distribution in their jurisdiction.

(contd. Table 1)

	groups and weaker sections are included. • Equity and social justice promoted in water allocation in an irrigation system but not explained for domestic water distribution and allocation.	from government agencies, and users in planning, design, development and management of schemes, role for women, water user's associations and involvement of municipalities and Gram Panchayat in operation, maintenance and management of water infrastructure. • Transparency and subsidy on water rates for poorer sections of the society has been recommended.	
Organizational functional balance, Accountability, Water pricing body, Data validity, Science and Technology	Water Administration		
	• No policy on regulation of organisations and functional balance. • No regulation for accountability and no separate water pricing body has been allocated. • Data sharing, coding, classification, processing and free exchange of data at national and state level has been promoted for reliable future projections. • Effective and economic use of water resource via promoting research in areas such as hydrometeorology, surface and ground water hydrology, river morphology and hydraulics, harvesting and ground water recharge, recycling and reuse, cropping system and other conservation techniques.	Institutional arrangements were promoted at the national level to deliberate upon issues relating to water and evolve consensus. In additions to the points from NWP 1987 and 2002, updated provisions included: • Water framework law, • Adaptation to climate change, • Demand management and water use efficiency, • Conservation of river corridors, water bodies and infrastructure, • Trans-boundary Rivers, International agreements with neighboring countries on bilateral basis for exchange of hydrological data. • Database and information system. • Research and training needs.	
		Use of modern techniques such as construction material, tunneling technologies, seismic design of structures, risk and disaster management, use of remote sensing, environmental impact, prevention of logging and soil salinity, etc.	

Source: Compiled by authors.

policies to state water policies is not evident in this context. The stages involved are not coherent. Although the scale is hugely different, the adoption of each policy from higher to lower order could be the key to policy implementation in a segregated yet layered manner.

Section-2: Evaluating framework of existing policy based on the common stages involved in ‘Policy Process’ (Hill, 1993). Stages are grouped in set of two with three each as ‘Problem Analysis’ and ‘Solution Analysis’ (Fig. 2).

Fig. 2: Analysis of existing water policies based on common stages in policy process



Source: Authors

It is observed from analysis in Fig. 2 that existing water policies lack hold on major stages of ‘Solution Analysis’. Stages in solution analysis guide to address the challenges of proposed policies and prepare for evaluation, comparison, and alternatives. Although since 2008 onwards water policies have included a section at the last about implementation, monitoring, and evaluation of the policy, however, there is no such monitoring of policies is evident nor there exist any committee dedicated to guiding the policy implementation on the ground. Hence, based on the preliminary study to understand the limitations, we suggest that the initiatives towards assessment, evaluation, comparison, and ranking of alternatives shall additionally help to maintain and monitor the implementation of policies on the ground.

The draft NWP 2012 was available on the Ministry of Water Resource website to invite comments from people, unlike two earlier national policies. The draft was circulated to all the states and Union Ministries. More than 600 comments were considered by the general public and policy was revised and discussed with the Consultative Committee of Parliament (Pandit and Biswas, 2019). Therefore, it is understandable that policy may not necessarily provide the rationale for each policy statement. However, it has now become important to

find the underlay on the policy being inefficient irrespective of extensive consultations. Since all the states and Union Territories owned the NWP 2012 and got equal opportunity to participate. However, the challenges faced by states to draw on objectives and transfer the goal to the action and implementation are to be re-thought. Or there could be some reform dictating the governance arrangements for renewed policy agreements between Centre and state to monitor the successful implementation. It is possible if these action and policy agreements stay unaffected by the changes in government. Additionally, there could be detailed guidance for each state based on its diverse political, social, and economic profile. This responsibility is equally shared by states and Union Territories to update the state policies on regular basis with effective monitoring strategies in place.

NWP's has been supported by water sectors, industries, and other stakeholders. But for policy to continue to be effective, it needs to be reflective of the lessons learned from past experiences. More than three decades of having an NWP provides with a wealth of knowledge for finding the reason to be called unimplementable. Lack of implementation of policies on the ground can be understood with a case example demonstrated in Fig. 3. The chain of policy statements taken top-down discussed inequitable water distribution in NCT Delhi. Since Delhi is a city-state, the objectives from the draft state policy are directly applicable. The purpose of reviewing the chain of policy transfer from NWP to state policy to ground reality is not to find deficiencies but opportunities. It is acceptable that policies at a higher level underscore inevitable and basic guiding principles, but the question here is to find

Fig. 3: Policy statements referring to equitable supply of water from top down



Source: Compiled by authors from NWP 2012, WPD 2016, Draft MPD 2041.

what could be the better way to handle the crises. The blame game of policies between Centre and state is not taking us anywhere nor helping the consumers who have to manage their lives in 30 Litre Per Capita Per Day (LPCD) of inadequate supply. Having a policy in place is not enough until its implementation is ensured.

Way Forward

Ministry of Jal Shakti is inviting the concept of public participation and working closely with various NGOs, water warriors, etc. in spreading awareness about water conservation by several schemes and campaigns. Moving out from the inter-governmental process of policymaking and shifting towards a multi-stakeholder approach shall also intervene efficiently in the current policy structure. As discussed in the table NWP 2012 has evolved with important recommendations based on water pricing, climate change, and water framework law, there is an opportunity to take these visions further with concrete implementation policies. The major challenge lies around the failure in the implementation of policies than providing solutions to the issues through bare statements. Just adding a few sections from national and international agendas in each new policy in regards to the burning issues such as climate change, global pandemics, etc. are apparently not going to be enough for the current scenario. It has been reported that the new NWP (not yet public) prepared by the 13-member committee aims at quality and water security for all. Also, it is announced by the head that the policy “*needs to be implemented by 2030 if India’s water woes are to be solved*” (Paliath, 2021). We hope the new National Water Policy to be more efficient, inclusive, and effective on-ground realities to achieve sustainable water resource management in India. Hence, within the capacity of the Centre and states, there could be various approaches that can take us a step ahead. Further research can shed light on the matrix of possibilities for restructuring the water policies in India.

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Footnote

1. Ministry of Water Power

Urban System and Entropy Analysis for Settlements of Punjab

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ASHWANI LUTHRA**

ABSTRACT

Urban system, generally referred to as networking of towns and cities having socio-cultural and economic interdependencies, is witnessed to experience varying spatial distribution patterns on account of varying accessibility levels, economic potentials, availability of natural and human resources, administration primacy, statutory urbanization policy, etc. Studies on distribution of urban settlements reflect varying accessibility levels and absence of urbanization policy, which tend to bring about imbalances in their distribution pattern. Punjab is a rapidly urbanizing state of India, which presents different distribution patterns due to variations in physiography, economic base, and transportation network in its regions. An appraisal of urban settlement distribution pattern reveals clustered, nucleated, and linear patterns of distribution in the State. Disaggregated analysis through application of nearness neighbourhood principle on the urban settlements of Punjab reveals three distributional segments in the State namely random distribution of settlements in the west, linear clustering in the central and eastern parts. However, parts of the State away from the central rail-road corridor and closer to inter-state boundaries show varying spatial distribution patterns. The present paper focuses on the investigating varying distributional patterns in different regions of the State with an objective to suggest policy framework for balanced urban system.

Keywords: Urbanization, Urban System, Spatial Distribution Pattern, Nearness of Neighbourhood

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INTRODUCTION

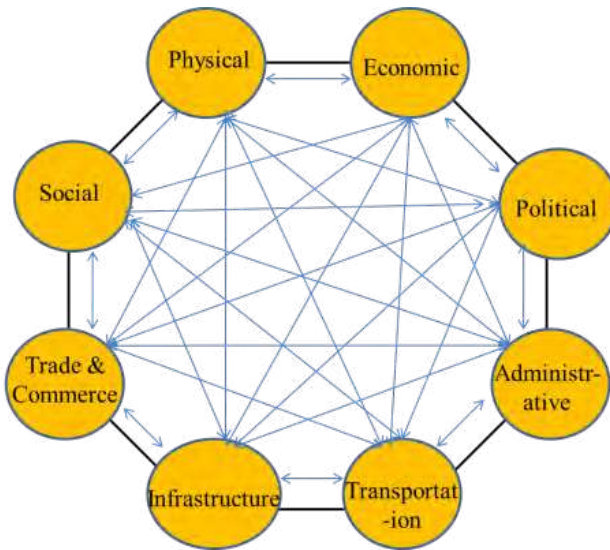
Urban settlements are considered as engines of growth, which do not develop in isolation, rather their interdependencies impact the growth of their surrounding settlements as well. Numerous push and pull factors tend to create link between the towns and cities. Citing Bucking (1967), Pred (1977) has viewed that 'system of cities can be expected to have a structure pattern of interdependencies and information linkages between its units which becomes increasingly intricate with the passage of time'. Thus, an urban settlement functioning as a network to depict interdependencies is generally termed as 'urban system'. Settlements are dynamic in nature and any significant change in them can bring change in the whole urban system. Rapid urbanization is prime factor accountable for bringing such changes leading to emergence of different distribution patterns. Present paper focuses on the study of changing urban system of Punjab in 1981 and 2011 using nearest neighbourhood technique to identify the imbalances occurring due to varying distribution patterns and to suggest a policy framework for balanced urban system.

UNDERSTANDING URBAN SYSTEM

Urban system depends on a variety of sub-systems including physical, economic, political, administrative, transportation, infrastructure, trade and commerce and social. Physical comprises land, topography, vegetation, mineral, and resources available; while economic includes employment, occupational structure, location, and hierarchy of market, etc. Social covers population, literates/illiterates, social status, and age group. Administrative incorporates role of various agencies responsible for development, and different policies and programmes. Numerous educational, medical, and institutional facilities constitute the components of infrastructure and transportation comprises of study of networks, modes, public transport, and terminals. However, integration and interdependence of all sub-systems is foremost for appropriate functioning of urban system. It should work as a grid so that urban system proves to be an efficient system as represented in Fig. 1. Thus, it can be said that urban system is networking between the cities and the neighbouring towns for different purposes and are represented in Fig. 2.

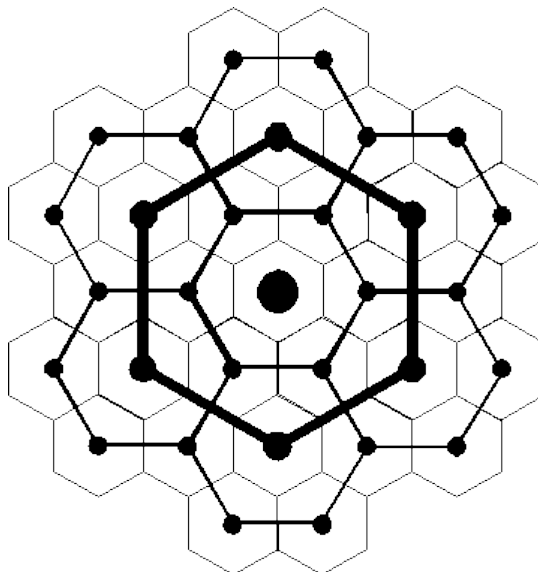
Acknowledging the same, Bourne and Simenons (1978) has defined 'urban system as set of cities in a region or nation and their attributes. It embraces the totality of activities in a nation accounting for the observed relationship among the regions and provides a model for the analysis of spatial variation of growth and change in system. In broader sense, it is still based on urban nodes, i.e. on spatial concentration of people and

Fig. 1: Urban System Mechanism



Source: Dr. Sonar Sanjaykumar G, Urban Sprawl: A System

Fig. 2: System and Sub-Systems of Settlements



Source: <https://rashidfaridi.com/2020/05/05/the-modification-of-august-losch/>

activities within a region or nation but it also includes the relationship of nodes to their surrounding areas and particularly the linkages among nodes'. Ramachandran (1989) is of the view that 'a system is a set of interacting and independent elements. It must be understood that it is not a settlement but its attributes that constitute the elements of that system. The attributes of a settlement are its population, location, aspect of spacing between settlements, the number of services offered and so on'. While clarifying urban system, Faisal (2003) has stated that 'urban system represents the frame within which all urban settlements are organized and interacted with each other regarding their sizes and functions'. System of urban settlements can be studied by applying different models introduced by various authors and researchers. Some of the models are Christaller's Central Place Theory, Losch Theory, Law of Primate City, Zipf's Rank Size Rule, Nearest Neighbourhood Analysis, Entropy Model, Gravity Model, etc. Nearest neighbourhood principle is used in the present research to appraise the urban system of the state of Punjab.

Concept of Entropy

Entropy is a term used to measure the spatial order, or uniformity of a system. In geography, it is applied to examine the distribution pattern of the settlements over a space. Nearness Neighbourhood Principle (NNP) is used to define the distribution pattern of the settlements. Ramachandran (1989) states that NNP is a technique to identify uniform, random, and clustered spatial distribution pattern of settlements based on measuring actual nearest neighbour distances between the settlements. In this analysis, settlements of a given hierarchical level are taken into account and nearest neighbours are identified for each settlement. The formula for calculating nearest neighbour is

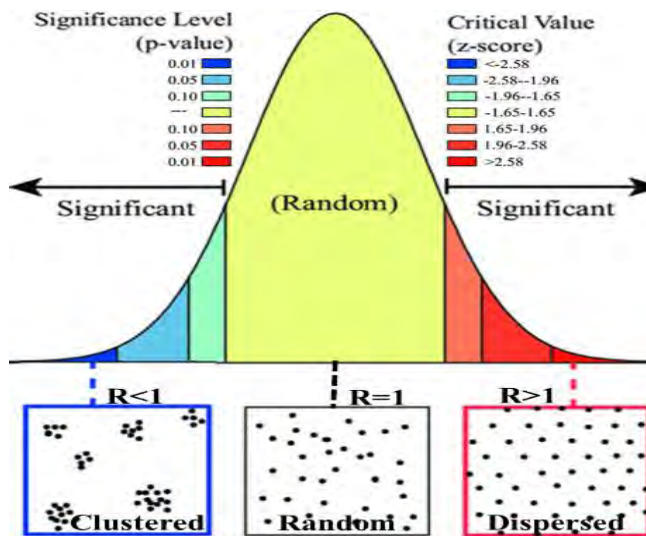
$$R_n = r_A / r_E \quad \text{where}$$

R_n	nearest neighbourhood value
r_A	mean observed nearest neighbour distance measured as (r/n)
r_E	mean expected nearest neighbour distance measured as $(0.5 \cdot \sqrt{A/N})$.

Three possibilities exist in the mean nearest neighbour distance. The actual mean nearest neighbour distance may be greater than, equal to or less than expected mean nearest neighbour distance. The ratio of r_A to r_E is known as nearest neighbour statistic R_n that varies from 0 to 2.15. R_n values less than unity indicate clustered distribution; a value equal to unity represents random distribution and value greater than one

indicates a uniform distribution as represented in Fig. 3. In addition, the figure reveals that Z-score of ± 1.65 indicates random distribution pattern; Z-score less than 1.65 indicates clustered distribution tendencies; and Z-score more than 1.65 indicates dispersed distribution tendencies of the objects.

Fig. 3: Nearest N'hood Based Distribution Patterns



Source: Khan Academy, (2021), "Population Size, Density, & Dispersal".

METHODOLOGY

The urban population growth trends are examined to understand the degree and level of urbanization, and class-wise population pattern during 1951-2011. Punjab has distinct physiographic, socio-economic, transportation and political characteristics across its districts and micro regions, therefore, disaggregated analysis of urbanization trends is carried out for its districts to understand the distribution pattern of urban population. Demographic data of District Census Handbooks and Census of India of the respective census years is used for the purpose. With the objective to explore the change in the entropy urban settlements of Punjab, NNP is applied to the classification of urban settlements for the 1981 and 2011 census years. Also, NNP is applied to its micro regions viz., Majha, Malwa and Doaba to understand the urban settlement distribution pattern in them. Spatial distribution pattern is analysed and displayed by using ArcGIS software.

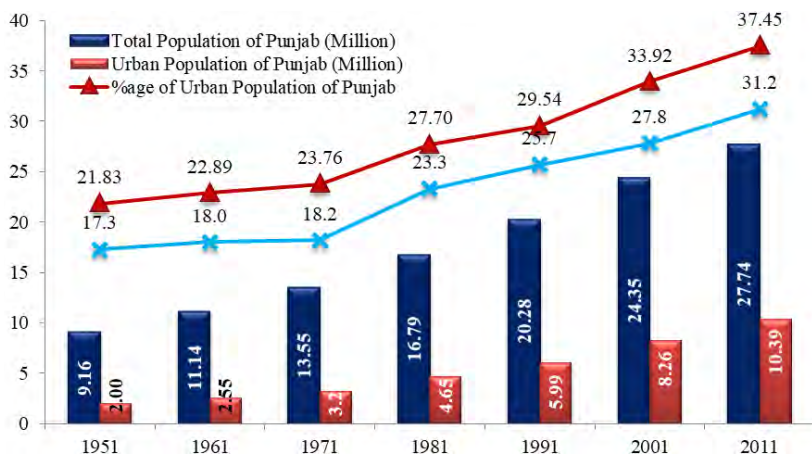
URBANIZATION TRENDS AND PATTERNS

Punjab has remained one of the most progressive states of India before and after Independence. Its economic progress is reflected in the pace at which it is urbanizing, especially since 1951. Following are some of the glaring facts about urbanization trends in Punjab:

Degree of Urbanization

As per Census of India 2011, Punjab is 5th most urbanized state of India. Its urban population stands at 10.3 million in 2011, which happened to be only 2.0 million in 1951 as represented in Fig. 4. Thus, there has been almost five times increment in the urban population of the state. In comparison, total population of the state has risen from 9.2 million in 1951 to 27.7 million in 2011, reflecting more than three times rise during 1951-2011. This indicates that the share of urban population to total population of Punjab is rapidly increasing. Whereas the share of urban population in the total population was 20.73 per cent in 1951, the share has increased to 37.18 per cent in 2011. Progressive industrialization, advanced infrastructure, high connectivity, and proactive government policies and programmes are responsible for higher degree of urbanization in the state. Resultantly, the degree of urbanization of Punjab has always remained four per cent to six per cent higher than the national average in the past six decades as represented in Fig. 4. The state has been on a rapid urbanization path since 2001 as it is growing by about 6 per cent higher than the national average.

Fig. 4: Population Trends of Punjab



Source: Data derived from Census of India, 1951- 2011.

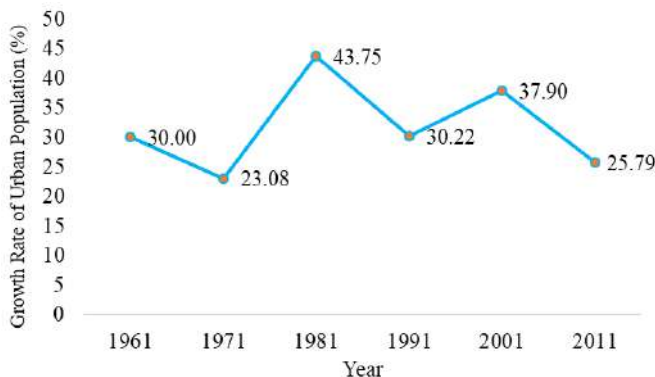
Level of Urbanization

It is not only the high degree but also even the pace of urbanization that is also of paramount importance to figure out the level of urbanization in a region. It is clear from Fig. 5 that oscillating urban growth behaviour is observed during the past six census decades (1951-2011) in Punjab. In 1981, the state registered the highest growth rate (43.75 per cent) in its urban population, which can be attributed to reorganization of the spaces after the enactment of Punjab Municipal Corporation Act 1976, migratory trends resulting from development of mandi towns, shifting tendencies towards industrialization and increased economic opportunities in the urban settlements. The state has witnessed urbanization level at 30 per cent or above in 1961, 1981, 1991 and 2001. Higher level of urbanization can be attributed to the proactive policies and programs of the state government. The growth rate of urban population in the state has decreased from 37.90 per cent in 1991 to 25.79 per cent in 2011.

District-Wise Distribution of Urban Population

Distribution pattern of urban population in the state depicts disparity in the level of urbanization in its districts. The number of districts has increased from 12 in 1981 to 20 in 2011 as shown in Table 1. It is clear from the table that in 1981 Ludhiana, Amritsar and Jalandhar districts contributed to about 16.44 per cent, 15.53 per cent, and 13.18 per cent in the urban population respectively. Rupnagar, Kapurthala and Hoshiarpur districts have shared less than four per cent of total urban population of State. The share of Bathinda, Sangrur, Faridkot, Firozpur, Gurdaspur, and Patiala districts ranges between four per cent to 10 per cent.

Fig. 5: Growth Rate of Urban Population



Source: Data derived from Census of India, 1951- 2011

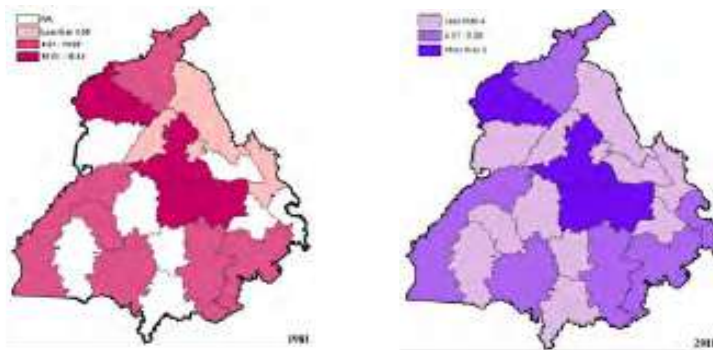
TABLE 1: PERCENTAGE SHARE OF URBAN POPULATION IN
THE STATE AND DISTRICTS OF PUNJAB

<i>Districts</i>	<i>Urban to Total Population of the State (Per cent)</i>		<i>Urban to Total Population of the District (Per cent)</i>	
	1981	2011	1981	2011
Amritsar	15.53	12.83	32.97	53.58
Barnala	----	1.83	----	32.02
Bathinda	6.37	4.80	22.68	35.95
Faridkot	7.39	2.09	23.92	35.15
Fatehgarh Sahib	----	1.78	----	30.91
Gurdaspur	7.06	6.34	21.69	28.69
Hoshiarpur	3.86	3.22	14.44	21.11
Jalandhar	13.18	11.17	35.32	52.93
Kapurthala	3.52	2.72	29.97	34.65
Ludhiana	16.44	19.90	42.01	59.16
Mansa	----	1.57	----	21.25
Moga	----	2.19	----	22.82
Mukatsar	----	2.43	----	27.96
Nawanshaher	----	1.21	----	20.48
Patiala	9.99	7.34	29.59	40.26
Rupnagar	3.33	1.71	21.58	25.97
Sangrur	6.92	4.96	22.81	31.17
SAS Nagar (Mohali)	----	5.24	----	54.76
Tarn Taran	----	1.36	----	12.66
Firozpur	6.42	5.31	22.81	27.23

Source: Census of India, 1981 & 2011.

In 2011, the contribution of Ludhiana to the urban population has increased to 19.90 per cent and contribution of Amritsar and Jalandhar has reduced to 12.83 per cent and 11.17 per cent respectively as shown in Fig. 6. This is because Tarn Taran and Nawashaher districts have been carved out from Amritsar and Jalandhar districts respectively. It is clear from figure that though the contribution of Amritsar and Jalandhar districts has reduced but they still remain as top contributors. Also, the other districts such as Barnala, Fatehgarh Sahib, Mansa, Moga, Mukatsar, Nawashaher, Rupnagar and Tarn Taran have the lowest share, i.e. less than four per cent in State's urban population because these districts have come into existence after 2000.

Fig. 6: Percentage of Urban Population in Districts of Punjab

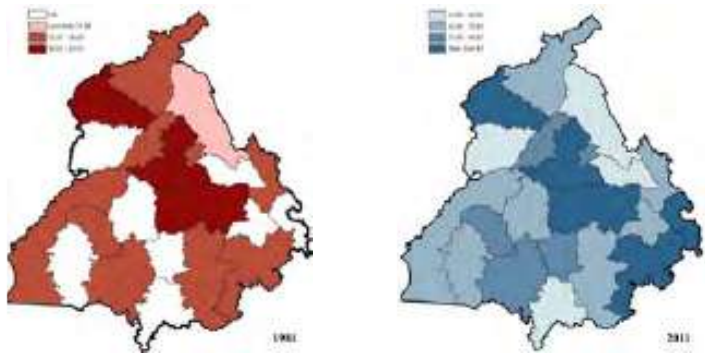


Source: Data derived from Census of India, 1981- 2011.

It is also important to study level of urbanization in the various districts of Punjab. Table 1 shows that in 1981, Ludhiana showed the highest level of urbanization, i.e. 42.01 per cent and ranks 1st followed by Jalandhar (35.32 per cent) and Amritsar (32.97 per cent). It clearly reveals that nearly 30 per cent of total population of districts resides in urban areas. Out of 12 districts, eight districts (66 per cent) have level of urbanization ranging 15 per cent to 30 per cent. Only, Hoshiarpur district has less than 15 per cent level of urbanization. However, Ludhiana, SAS Nagar (Mohali), Amritsar and Jalandhar emerged as most urbanised districts in 2011 (59.16 per cent, 54.76 per cent, 53.58 per cent and 52.93 per cent respectively). It proves that more than half of population of district resides in urban areas.

Though, SAS Nagar (Mohali) is a new formed district but the district emerges as one of the part of tri-city due to nearness to State capital. So, it is ranked second most urbanized districts of Punjab and displaced the Amritsar and Jalandhar district to 3rd and 4th rank. Also, these four districts constitute nearly half of population of Punjab. TarnTaran, Nawashaher, Hoshiarpur and Mansa have the lowest level of urbanization, i.e. 12.66 per cent, 20.48 per cent, 21.11 per cent and 21.25 per cent respectively as represented in Fig. 7. Out of these, TarnTaran and Mansa are the newly formed districts whereas Nawashaher and Hoshiarpur have the lowest population among all districts. The districts located along the central corridor namely Amritsar, Jalandhar, Ludhiana and SAS Nagar have highest percentage of urban population in 2011 as compared to Northern and Southern direction. Similarly, same districts have witnessed high growth rate due to influx of population, proactive government policies and programmes. This leads to create imbalances in terms of population distribution, infrastructure, resources, etc.

Fig. 7: Level of Urbanization in Districts of Punjab (1981 & 2011)



Source: Data derived from Census of India, 1991 and 2011.

Class-Wise Distribution Pattern of Urban Population

With the increasing urbanization, the number of urban settlements has increased in the state. It is clear from Table 2 that total number of statutory and census towns has increased from 134 in 1981 to 217 in 2011. Thus, the state has experienced an increase of 1.62 times in the number of urban settlements. Table 2 reveals that 27.38 per cent (4.6 million) of urban population is accommodated in 134 towns in 1981, which has risen to 37.18 per cent (10.6 million) in 217 towns in 2011, registering an increment of 1.36 per cent. Thus number of urban settlements have risen more than the urban population in the state.

Class distribution of urban settlements in Table 2 reflects that the number of class I towns has risen by about 2.3 times (from 7 in 1981 to 16 in 2011) and the population residing in them has increased by almost 2.5 times (from 2.2 million in 1981 to 5.9 million in 2011). Similarly, number of Class II towns has more than doubled during 1981-2011 (from 10 in 1981 to 24 in 2011) and their population has increased by about 2.8 times. Number of class III, IV, V and VI towns has increased by 1.85, 1.66, 1.28 and 1.14 times but their population has risen by 1.56, 1.80, 0.00, 2.00 times respectively. Thus, it is evident that class I and II settlements are increasing not only in number but their population is also rising by the same proportion, indicating polarization tendencies of urban population.

An analysis of percentage share of towns and population in each class in Table 2 clearly reveals polarization of urbanization in Punjab. It is evident that only 5.22 per cent (7 class I towns) of the total number of towns were accommodating 47.83 per cent (2.2 million) of the total urban population in 1981, in 2011 about 7.37 per cent (16 class I towns) of the total number of urban settlements are accommodating 57.28 per

TABLE 2: CLASS-WISE DISTRIBUTION AND PERCENTAGE SHARE OF URBAN SETTLEMENTS

Year	Urban Population (in million)	Total Towns	Number of Towns						Population					
			Class I	Class II	Class III	Class IV	Class V	Class VI	Class I	Class II	Class III	Class IV	Class V	Class VI
1981	4.6	134	7 (5.22)	10 (7.46)	27 (20.15)	36 (26.87)	40 (29.85)	14 (10.45)	2.2 (47.83)	0.6 (13.04)	0.9 (19.57)	0.5 (10.87)	0.3 (6.52)	0.05 (1.09)
2011	10.3	217	16 (7.37)	24 (11.06)	50 (22.58)	60 (28.11)	51 (22.58)	16 (8.29)	5.9 (57.28)	1.7 (16.50)	1.4 (13.59)	0.9 (8.74)	0.3 (2.91)	0.1 (0.97)

Note: Figures in parentheses are percentages from the row totals.
Source: Census of India, 1981 & 2011.

cent (5.9 million) of the total urban population in the state. Similarly, 7.46 per cent, 20.15 per cent, 26.87 per cent, 29.85 per cent and 10.45 per cent class II, Class III, class IV, class V and class VI towns respectively were inhabiting 13.04 per cent, 19.57 per cent, 10.87 per cent, 6.52 per cent and 1.09 per cent of the total urban population in the respective class of town in 1981. In 2011, 11.06 per cent, 22.58 per cent, 28.11 per cent, 22.58 per cent and 8.29 per cent class II, Class III, class IV, class V and class VI towns respectively are inhabiting 16.50 per cent, 13.59 per cent, 8.74 per cent, 2.91 per cent and 0.97 per cent of the total urban population in the respective class of town. Thus, small number of class I towns are bearing most of the brunt of urban population in Punjab.

It is worth noticing that class II towns have shown positive tendencies, i.e. with the increase in percentage share of number of such towns, they are accommodating an increased share of urban population. Share of class III towns has reduced from 20.15 per cent (27 in number) accommodating 19.57 per cent of the urban population in 1981 to 22.58 per cent (50 in number) accommodating 13.59 per cent of the urban population in 2011. But for all other classes of towns inverse tendencies are seen to indicate that the increasing number of class IV, V and VI towns are accommodating lesser percentage of urban population in them during 1981-2011. It is also evident from Table 2 that almost 59 per cent of the towns (class IV, V and VI towns) are inhabiting only 12.6 per cent of the urban population in them in 2011.

Thus, the share of urban population in lower order towns has decreased over a period of time and that is the sign of lopsided development in the State. This is also an indication of uneven distribution of population in towns of different classes. Resultantly, the pressure on class I towns is increasing because the population from lower order towns is migrating to them to avail better economic opportunities and other facilities.

Region-Wise Distribution of Urban Population

The distribution and growth of urban settlements in Punjab can be better observed by dividing the total State into regions/zones. Based on the division of terrain by rivers, the State is divided into three regions viz., Majha, Malwa and Doaba as shown in Fig. 8. The division depicts distinct socio-cultural features of each region. Majha region includes three districts, namely Amritsar, Gurdaspur and Tarn Taran. Malwa region is the largest region and comprises 13 districts viz., Barnala, Rupnagar, Ludhiana, Fatehgarh Sahib, Patiala, Sangrur, Moga, Bathinda, Mansa, Mukatsar, Faridkot, SAS Nagar (Mohali) and Firozpur. Doaba region is composed of four districts, namely Hoshiarpur, Jalandhar,

Kapurthala and Nawashaher. Since the composition of the region is not uniform, therefore, imbalanced urban population distribution is anticipated.

Fig. 8: Regions of Punjab



Source: https://2.bp.blogspot.com/-6Aqzm1cRfEU/WztYAIKMUTI/AAAAAAAAARc/M2ZOTkjfbwTN3YikFLiV0f5T_mjQr7awCLcBGAs/s1600/mmd.jpg

It is evident from Table 3 that about 58 per cent of total towns and about 57 per cent of the total urban population figured in the Malwa region in 1981. However, its share to total number of towns has decreased to about 57 per cent but its share in urban population has increased to 61 per cent in 2011. Concentration of industries, high rail-road connectivity/ accessibility, political focus, etc. can be designated as prime factors responsible for higher percentage share in urban population. Malwa region has three large cities (Ludhiana, Bathinda, Firozpur) which inhabit nearly 35 per cent of the total urban population of the region. Excluding these cities would bring this region closer to the percentage share of the other two regions.

Majha region has experienced more than two times increment in the number of towns during 1981-2011 (rise from 22 in 1981 to 46 in 2011) but in percentage terms this share is only 16.42 per cent and 21.20 per cent in 1981 and 2011 respectively. The region accommodates almost 1/5th of the urbanites of the state. The urban population has increased in Majha region but the share to total urban population has decreased by almost two per cent during 1981-2011. Deficient economic activities and

TABLE 3: REGION-WISE DISTRIBUTION OF TOWNS AND URBAN POPULATION

Region	No. of Towns		Population (in million)	
	1981	2011	1981	2011
Majha	22 (16.42)	46 (21.20)	1.05 (22.63)	2.14 (20.58)
Doaba	34 (25.37)	51 (23.50)	0.95 (20.47)	1.90 (18.27)
Malwa	78 (58.21)	120 (55.30)	2.64 (56.90)	6.36 (61.15)
Total	134 (100.0)	217 (100.0)	4.64 (100.0)	10.4 (100.0)

Note: The figures in parentheses are percentages from their respective totals.
Source: Census of India, 1981 & 2011.

nearness to sensitive international border are the key factors responsible for these conditions.

In case of Doaba region, the condition remains quite steady as the share of urban settlements showed slight fall of 1.87 per cent during 1981-2011, whereas the share of urbanities has reduced upto 2.2 per cent during the same period. Out-migration in search of better opportunities and lack of connectivity are the factors responsible for lesser and declining urbanization in the region.

Thus, it can be inferred that Malwa region is the most urbanized region in the state as it is accommodating 2/5th of urban population whereas other regions accommodate the remaining urban population. It clearly depicts polarization tendencies of urbanization towards Malwa region, which leads to regional imbalances.

ENTROPY ANALYSIS OF URBAN SETTLEMENTS

The changes in the number and population in the towns in 1981 and 2011 in Punjab describes the nature and magnitude of their distribution patterns. But spatial distribution of towns in the overall space and in different regions helps to understand different perspectives of urbanization. NNP is a common technique to study the spatial distribution pattern of the settlements. Applying nearest neighbourhood formula on the urban settlements of Punjab, it is evident that the nearest neighbourhood ratio (NNR) has reduced from 1.58 in 1981 to 1.43 in 2011 as shown in Table 4. According to the standards, if ratio is more than unity then it depicts uniformly dispersed pattern of distribution

of towns in the state. Also, Z-statistic greater than 2.58 indicates highly dispersed pattern of the settlement. As Z-statistic is more than 12.77 and 12.07 in 1981 and 2011 respectively, therefore, it can be inferred that the distribution pattern of towns in Punjab is very highly dispersed. Under such pattern, efficiency of infrastructure reduces to large extent. The large towns benefit whereas inhabitants of small towns have to travel longer distance to avail these facilities and services. As the ratio has reduced slightly, it is evident that distribution of the towns is moving towards randomness, which is again a sign of lack of interaction and imbalanced urban system. Similar tendencies are visible in Punjab as well indicating that appropriate actions need to be taken to balance the urban system of the State by following regional planning approach.

TABLE 4: NEAREST NEIGHBOURHOOD RESULTS FOR WHOLE OF PUNJAB

<i>Aspects</i>	<i>Formula or Code</i>	<i>1981</i>	<i>2011</i>
Number of Settlements	n	134	217
Area	A (sq. km)	50362	50362
Total Neighbourhood Distance	$\sum ra$ (km)	20516	28708
Observed Average Distance	ra (km)	15.31	10.88
Expected Average Distance	re (km) $(1/2\sqrt{A/N})$	9.69	7.62
Nearest Neighbour Ratio	R	1.58	1.43
Standard Error	SE $(0.26136/\sqrt{N^2/A})$	0.44	0.27
Test Statistic	Z = ra - re /SE	12.77	12.07

Source: Calculated figures.

Disaggregated analysis of the State reveals that NNR has reduced in all its regions as shown in Table 5. The ratio being more than one and reducing during 1981-2011 in all the regions indicates that the distribution of the settlements is becoming more imbalanced. It is evident from Table 5 that NNR has changed the highest in the Majha region where it has reduced from 1.65 in 1981 to 1.04 in 2011, revealing that the region is fastly heading towards random distribution of settlements. Interestingly, the Z-statistic value has shown a sharp fall during 1981-2011, i.e. 5.86 in 1981 and 0.47 in 2011, which indicates that town distribution pattern has moved from highly dispersed to random. More than double increment in the number of towns is the reason for the reduced NNR leading to the above tendencies.

Malwa is the next best region where tendencies of randomness are significantly visible. It is clear from Table 5 that NNR value has

TABLE 5: NEAREST NEIGHBOURHOOD RESULTS IN DIFFERENT REGIONS OF PUNJAB

<i>Aspect</i>	<i>Formula or Code</i>	1981			2011		
		<i>Majlha</i>	<i>Malwa</i>	<i>Doaba</i>	<i>Majlha</i>	<i>Malwa</i>	<i>Doaba</i>
Number of Settlements	n	22	78	34	46	120	51
Area	A (sq. kms)	8660	32806	8896	8660	32806	8896
Total Neighbourhood Distance	$\sum ra$ (kms)	360.8	1308.84	418.54	327.06	1185.60	396.27
Observed Average distance	ra (kms)	16.40	16.78	12.31	7.11	9.88	7.77
Expected Average Distance	re (kms) $(1/2\sqrt{A/N})$	9.92	10.25	8.09	6.86	8.27	6.60
Nearest Neighbour Ratio	R	1.65	1.64	1.52	1.04	1.20	1.18
Standard error	SE $(0.26136/\sqrt{N^2/A})$	1.11	0.61	0.73	0.53	0.39	0.48
Test Statistics	$z = (ra - re)/SE$	5.86	10.76	5.82	0.47	4.08	2.42

Source: Calculated figures.

reduced from 1.64 in 1981 to 1.20 in 2011. Here also the number of towns has grown from 78 in 1981 to 120 in 2011, an increment of 1.54 times. Malwa region occupies about 65 per cent of the geographic space of the state. Also, Z-statistic value has fallen sharply from 10.76 to 4.08 in 1981 and 2011 respectively, clearly indicating that town distribution pattern has moved from highly dispersed to dispersed, which may attain randomness in the times to come. Therefore, the chance of random distribution of the settlement is more. Such tendencies will have all the problems and issues as mentioned for Majha region. The NNR in Doaba region has reduced from 1.52 in 1981 to 1.18 in 2011 as shown in Table 5. Here also the number of towns has increased by 1.5 times, from 34 to 51 in 1981 and 2011 respectively. Here also Z-statistic value has reduced from 5.82 in 1981 and 2.42 in 2011, indicating that town distribution pattern has moved from highly dispersed to moderately dispersed pattern.

Thus, NNR is the highest in Majha region followed by Malwa and Doaba regions. But reducing Z-statistic values during 1981-2011 clearly indicates that these regions have tendencies of shifting from dispersed distribution to moderately dispersed or random distribution pattern. Apart from increased number of towns in the regions, differential accessibilities to different parts of a region may also have affected the ratio. Varying nearest neighbour ratio among three regions reflect the degree of imbalance through dispersion factor. As a result, Doaba region may be designated as a depressed or less developed region in future.

CONCLUSION

Balanced urban and regional development is essential to benefit all the inhabitants of each region. But disparities in urbanization result in varying distribution patterns of urban settlements across the regions, which tend to encounter infrastructural differentials. Similar tendencies are experienced in Punjab where uneven urbanization pattern has caused imbalanced urban system in the past census decades. Due to rapid urbanization, the number, size and distribution pattern of urban settlements in the state have grown enormously. During 1981 – 2011, the districts located along the central corridor i.e. Amritsar, Jalandhar, Ludhiana and SAS Nagar witnessed highest per centage of urban population in 2011, i.e. more than 50 per cent as compared to districts in Northern and Southern direction. These districts also experienced high growth rate due to influx of population, proactive government policies and programmes and high class infrastructure. This led to create imbalances in terms of population distribution, infrastructure, resources, etc. During 1981-2011, the number of towns has increased by 1.62 times in which the urban population has increased by more than five times. But

increased urban population shows polarized tendencies as about 57 per cent of the urban population resides in only seven per cent towns (class I category) in 2011. On the contrary, 50 per cent towns (class III and IV category) and 31 per cent towns (class V and VI category) accommodate only 22 per cent and three per cent of the total urban population of the State, reflecting lopsided urban population distribution. Region-wise distribution of urban population also reveals that more than 3/5th of the total population of the state resides in Malwa region, indicating polarized tendencies. Entropy modelling for the towns of Punjab clearly indicates imbalanced urban settlement distribution pattern in the state. Reduced NNRs clearly indicate that the state is moving from the state of dispersed distribution to the state of random distribution. Such a state tends to bring imbalances in the urban settlement distribution pattern reflecting unintegrated and deficient inter and intra regional infrastructure. This calls Punjab to prepare and adopt an urbanization policy, which tends to be balanced, well-integrated and infrastructural efficient to benefit all the inhabitants of the state.

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Issues Faced by Street Vendors in Hyderabad and Policy Response of Government – Post Covid-19 Crisis: PM SVANidhi Yojana

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ABSTRACT

The study aims to understand the issues faced by street vendors: impact of covid shutdowns, eviction, rent payment, ID cards, people who benefitted from PM Street Vendor AtmaNirbhar Nidhi (PM SVANidhi) Yojana: the policy meant to help street vendors rebuild their business by giving them loans without collateral. We conducted mixed research with quantitative questionnaire by survey method and qualitative research by freewheeling chat after the questionnaire to bring out their perspectives. Many interesting observations came to light from our research. Like in most other industries, the gender composition of street vendors is heavily dominated by male vendors. 61 per cent of street vendors are migrants, out of these 56 per cent have migrated to native places during Covid crisis. On the bright side, 86 per cent of street vendors possess ID cards. 88 per cent of those who applied for PM SVANidhi loan, have received it. The study draws important observations on issues faced by street vendors and the success of PM SVANidhi Yojana in the disbursement of loans to street vendors.

Keywords: *Street vendors, Covid crisis, PM SVANidhi Yojana, Eviction, Rent payment, migration.*

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INTRODUCTION

One of the most vulnerable entrepreneurs in India, the micro-entrepreneurs, who make a living by selling their products at most reasonable prices is the street vendor. One cannot imagine a common man without street vendors' myriad products of daily use to fancy items that are made available at prices impossible to beat by any big corporate. However, street vendors lack legitimacy in the eyes of law enforcement agencies and big businesses. One of the major reasons behind increasing number of street vendors in under-developed and developing countries is the lack of employment opportunities in organised sector. Migrants from villages who come to cities in search of jobs also end up working as street vendors. Covid-19 shutdown and restrictions have severely affected street vendors. Now that economy has opened up, they are back on the street but still trying to gain firm feet. We have tried to understand the various issues faced by street vendors, the legal provisions governing street vendors, the policy response of government in the wake of Covid-19 crisis. Our study tried to understand the efficiency of implementation of PMSVANidhi Yojana which is meant to provide capital for street vendors to kickstart their business again.

Supreme Court Judgments on Street Vendors

The legal position of street vendors as illegal elements that needed to be punished has changed after the street vendors took legal recourse and got an olive branch from court against harassment, eviction, and got their right to earn livelihood recognised by law.

Some very crucial judgments by Supreme Court recognised street vendors' right to sell their goods subject to regulation by municipal authorities in several important judgments in the following cases: *Bombay Hawkers Union vs. Bombay Municipal Corporation* (1985)3 SCC 528, *Maharashtra Ekta Hawkers Union and another Vs. Municipal Corporation, Greater Mumbai* (2013), *Sodan Singh vs. New Delhi Municipal Committee* (1989)4 SCC 155. These have paved the way for recognition of street vendors as legitimate micro-entrepreneurs who should be allowed to sell their goods in public spaces.

National Policy on Urban Street Vendors 2009 and Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014

These policies recognise the identity of street vendors as an important, integral and legitimate part of society and recognises the contribution of street vendors in helping the government in poverty alleviation and generating self-employment without depending on the government and becoming a burden on society and government. The policy aims

to recognise the street vendors at various levels of government: Centre, state, and local governments.

The 2014 Act evokes Article 14 and Article 19(1) of the Constitution to recognise the right of the street vendors as the right to equality, and freedom of profession. The Act entrusts the responsibility of protecting the rights of the street vendors to local municipal authorities.

Issues faced by Street Vendors and the Covid Crisis

- Perception of street vendors in the eyes of municipal authorities and big businesses is that street vendors are a nuisance and cause traffic problems.
- Migration of street vendors back to their villages in the wake of Covid-19 restrictions and lack of means of livelihood.
- Apart from Covid crisis, there are myriad problems faced by street vendors for many decades. There is no system concerned with their welfare to provide the basic facilities such as arrangements for solid waste disposal, public toilets, electricity, water, credit, and storage facilities as street vendors are in unorganised informal sector. This has changed after laws have been made on street vendors with formation of Town Vending Committees, favouring street vendors. However, there are still many areas left which need improvement.

PM SVANidhi Yojana for Street Vendors: A Policy Response of Government to Covid-19 Crisis

In May 2021 when most Covid restrictions and lockdowns were lifted and after unlocking phases were over, the Government of India came up with PMSVANidhi Yojana on June 1st, 2021. The scheme is applicable to those who were engaged in street vending in the urban areas including surrounding semi-urban and rural areas prior to March 24, 2020. For the purpose of identification of the beneficiaries of the scheme, an ID card or CoV (Certificate of Vending) issued by TVC (Town Vending Committee) or ULB (Urban Local Body) or LoR (Letter of Recommendation) has been considered. The ULBs play a prominent role in implementation of this policy.

Microfinance institutions, Scheduled Commercial Banks, Self-help Groups, Regional Rural Banks (RRBs), Cooperative Banks, Small Finance Banks (SFBs), Micro Finance Institutions (MFIs), and NBFCs (Non-Banking Financial Institutions) have been roped in for disbursement of loans to street vendors under this scheme.

Following are the salient features of the scheme:

1. Beneficiaries do not have to show any collateral to avail the loan, suffice to meet the eligibility criteria to get a loan up to Rs.10,000.
2. To encourage repayment of loans, an interest subsidy of seven per cent is given to the beneficiary in the form of cashback for successfully paying instalments.
3. By meeting the targets of digital transactions, they can earn a cashback of 50-100 rupees per month.
4. The beneficiaries can also repay the loan early and there would be no penalty for early repayment.
5. By paying the loan within the specified time period or earlier, they can build their credit history and become eligible for another loan immediately for higher amount.

The seamless application process of PM SVANidhi Yojana

One of the highlights of the PM SVANidhi Yojana is the seamless application process. While street vendors who have CoV or ID cards can easily avail loan, the PM SVANidhi Yojana ensures that those who were missed out in the survey of ULBs can still avail loan through LoR issued by TVC or ULB and can directly apply through the dedicated website of PM SVANidhi <https://pmsvanidhi.mohua.gov.in/>, a screenshot of the website is shown in Fig. 1, or from the Common Service Centres Scheme <https://csc.gov.in/> website. The simple 3 step process for application shields the street vendors completely from the hassle of dealing with banks.

Fig. 1: PM SVANidhi Yojana application portal



Source: <https://pmsvanidhi.mohua.gov.in/>

Figure 2 shows the three ways in which application can be completed for applying for loan under PM SVANidhi Yojana: CoV or ID cards, LoR for those who were missed out of survey, and LoR for those from adjoining rural and peri-urban areas.

Fig. 2: The PM SVANidhi Yojana portal displaying the three options to apply loan online

The screenshot shows the PM SVANidhi portal interface. At the top, there is a navigation bar with the PM SVANidhi logo, the Ministry of Housing and Urban Affairs, and a Logout button. Below the navigation bar, there are four steps: 1. Check Vendor Category, 2. PM Application Form, 3. Upload Documents, and 4. Submit Application. The main content area asks 'Do you have Aadhaar Card?' with Yes and No radio buttons. Below this, there is a section titled 'Vendor Categories' with a table listing three categories (A, C, D) and their eligibility criteria. Each category has a 'Select' button.

Category	Eligibility	Select
A	Street vendors in possession of Certificate of Vending (CoV) / Identity Card issued by Urban Local Bodies (ULBs)	☐
C	Street vendors left out of the ULB led identification survey or who have started vending after completion of the survey and have been issued Letter of Recommendation (LoR) to that effect by the ULB / Town Vending Committee (TVC)	☐
D	Street vendors of surrounding development/ peri-urban / rural areas vending in the geographical limits of the ULBs and have been issued Letter of Recommendation (LoR) to that effect by the ULB / TVC	☐

Source: <https://pmsvanidhi.mohua.gov.in/>

Emphasis on digital literacy and digital transactions by PM SVANidhi Yojana

PMSVANidhi Yojana has incentivised digital transactions by providing additional cash back every month for achieving monthly targets of digital transactions. This is a great step in penetrating digital transactions to the grassroots of economy. There are multiple benefits to both the street vendor and the customers in adopting digital payments:

- Thanks to Covid, no-contact transactions are preferred by the customers to avoid transmission of corona. The aversion associated with buying from street vendors for want of no-contact transactions would be mitigated with digital transactions.
- Street vendors have difficulty collecting cash during peak business hours, time that otherwise would go into serving the customers. With digital transactions, the customers pay and show the payment notification without need of any physical exchange of money. This saves time during precious business hours and also helps ease of doing business.
- For most street vendors, the transaction amounts are very small and it is often very difficult to tender exact change. Digital payments ease conducting small transactions.

Definition and Categorisation of Street Vendors

National Policy on Urban Street Vendors, 2004, **Department of Urban Employment & Poverty Alleviation, MUPA, Government of India**, defines street vendors as *"A street vendor is a person who offers goods or services for sale to the public without having a permanently built structure occupying a temporary space on pavements or any public or private area, establishing a movable stall, or they could be mobile, move from place to place carrying their products on pushcarts, cycles, baskets, or in moving buses."*

For the purpose of this study, we have adopted the same definition as that of National Policy on Street Vendors 2004 and that of GHMC (Greater Hyderabad Municipal Corporation).

RESEARCH METHODOLOGY

The study is conducted in Hyderabad City, the capital of Telangana state. The study attempts to understand the efficacy of policy response of the Government in helping street vendors recover from Covid-19 crisis through microfinance facility, the effectiveness of implementation of policy on the ground, and other major issues faced by street vendors such as eviction, rent payment, licensing, application process, etc. which are discussed in detail in the study.

Research Design

The study uses a mixed research method to collect data and information from our target group. We carried out quantitative research by survey questionnaire method to answer the research questions and also noted the responses from freewheeling interaction with the respondents after the questionnaire to find out their most pressing issues.

Target Population

The target population of the study is street vendors. For the purpose of this study, we have interviewed street vendors who do not have permanent structures that cannot be moved if needed that is, we interviewed people on pushcarts or makeshift arrangements to sell their goods whether stationary or mobile. We have interviewed people across the spectrum of products offered from fruits, vegetables, utility items, books, pot sellers, flower sellers, fancy items, etc.

Sampling

The study uses random sampling method for conducting research. As per GHMC, there are a total of 1,62,000 (one lakh sixty-two thousand) street vendors in Hyderabad. For a confidence level of 95 per cent, with

a margin of error of five per cent, the random sample size required to conduct the study is 385. We received a total of 398 responses from our research. We have randomly selected areas from across the city to conduct our research. We have selected the following areas randomly for our research: A S Rao Nagar, Koti, Kukatpally, Abids, Secunderabad, L B Nagar, Uppal, Bachupally, Kothapet, Charminar, Cantonment Board, Nadergul, Ghatkesar, Old Bowenpally, and Mehdiapatnam. Within these areas, where we conducted research, we have skipped 5 respondents after every successful response from a train of contiguous street vendors. We have conducted pilot research based on the initial questionnaire and then redesigned the questions to accurately record the possible responses. Additional questions had been added in the light of new information.

The objectives of the research

1. To understand the basic demographics of street vendors.
2. To know whether the street vendors faced issues from authorities while selling their products and if they faced eviction.
3. To find out how many of the street vendors are part of any association for street vendors or TVCs.
4. To find out how many have some form of valid document for street vending that is ID card or Vending Certificate. And to understand how easy or difficult the process of application for getting the ID card or Vending certificate is.
5. To identify how many have applied or availed loans from PM SVANidhi Yojana.
6. To understand the issue of rent payment for street vending and how possession of valid ID card or vending certificate affects the issue of street vending and the earnings of street vendors.
7. To understand the expectations of the street vendors vis-a-vis support from the government.

Method of Data Collection

We have collected secondary data for the purpose of understanding the issue of street vendors, the position of law on the issue of street vendors, the issues faced by them, the progress already made in studying street vendors, and to figure out the new dimensions we can explore

and bring out from our research. The primary data we collected is through questionnaire. Based on the objectives of the research, we have designed the questions to adequately capture the data required to meet the objectives we set out to. The majority of questions are closed-ended which are directly amenable to statistical analysis while the open-ended questions need to be processed to be able to draw meaningful observations. In closed-ended questions we used multiple-choice questions and 7-point Likert scale to understand the ease or difficulty in doing a particular task.

Limitations of the Study

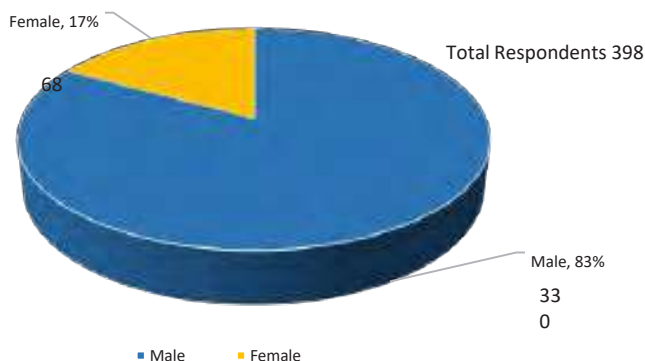
Some of the respondents expressed their concern if their details will be used to target them. Their fears were allayed by explaining to them that no personal data is collected including name or phone number that can help trace an interviewee to a particular person. For fear of internal politics in street vending associations or other groups they may be part of, it was possible that the respondents would try to give non-controversial responses in the presence of fellow street vendors. To get genuine responses from the respondents to the extent possible, the questionnaire was put forth by ensuring safe distance from his fellow street vendors.

Demographics of Street Vendors

Gender Composition of Street Vendors

- The gender composition of street vendors is predominantly male, refer Fig. 3. This could be because of the harsh conditions in which street vendors have to work without any facilities for child care or toilets, etc.
- Eighty three per cent (330 out of 398) respondents are male and only 17 per cent (68 out of 398) are female, refer Fig. 3.
- The average age of male street vendors is 43 years. The minimum age is 12 and the maximum age is 90 years.
- Average age of female street vendors is 47 years, higher than the average of male street vendors. The minimum age of female street vendors is 24 and the highest age being 86 years.
- No women under 24 years are working as street vendors while there are considerable number of boys and men under 24 years.

Fig. 3: Gender Composition of Street Vendors Surveyed

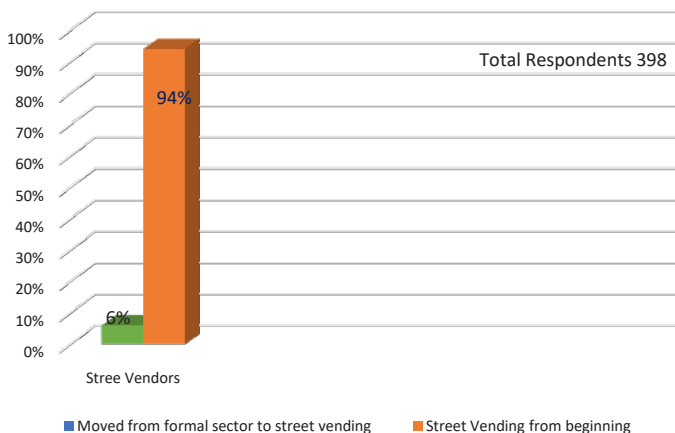


Source: Author.

Mobility of Street Vendors from the formal sector to street vending

There is very little, six per cent, mobility of people from organised sector to street vending, refer Fig. 4. A whopping 94 per cent of the street vendors have not worked in organised sector before street vending.

Fig. 4: Extent of mobility of people from formal sector to street vending



Source: Author.

Migration of Street Vendors during Covid-19 Lockdown

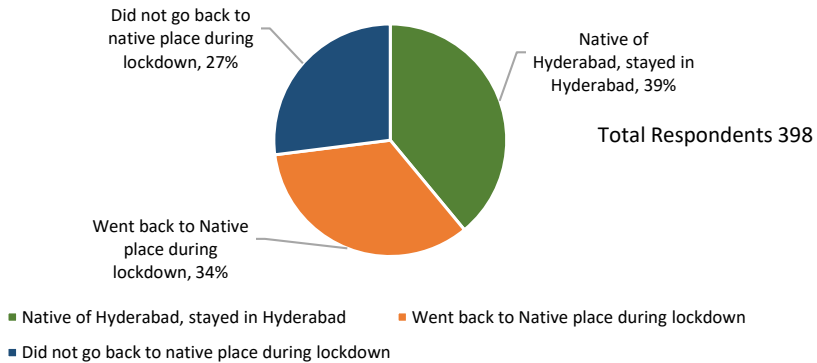
There has been a significant migration of street vendors during lockdown, refer Fig. 5.

- Thirty four per cent of the respondents said that they went back to their village.

- Twenty seven per cent said that they stayed back in Hyderabad instead of going back to their native place in spite of lockdown.
- Thirty nine per cent have said that they are natives of Hyderabad and stayed back in Hyderabad.

We can infer from this data that 61 per cent of the street vendors are migrants who came to Hyderabad in search of work.

Fig. 5: Migration of street vendors during lockdown



Source: Author.

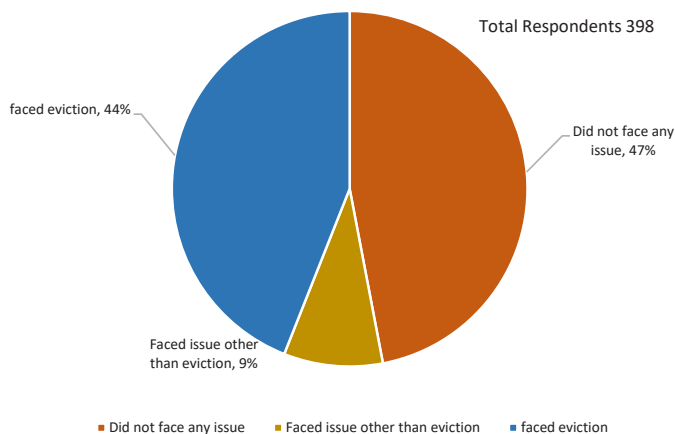
Number of Years Working as Street Vendor

- The average number of years from which a person has been working as a street vendor is 8 years 2 months.
- The range of years of working as street vendor is from one month to 30 years maximum.
- The average years of experience of a street vendor is eight years while the maximum being 30 years shows that the average experience is very close to the minimum than midway of minimum and maximum that is 15 years. This indicates that there could be regular influx and outflux of people into street vending for various reasons and needs further research to ascertain.

Street Vendors Facing Issues while Conducting Business

- Fifty three per cent (211 out of 398) have said that they faced some issues while selling their goods, refer Fig. 6.
- Forty seven per cent said that they did not face any issue while selling their goods.
- Forty four per cent (175 out of 398) faced eviction at least once.

Fig. 6: Percentage of Street Vendors facing issues while conducting business



Source: Author.

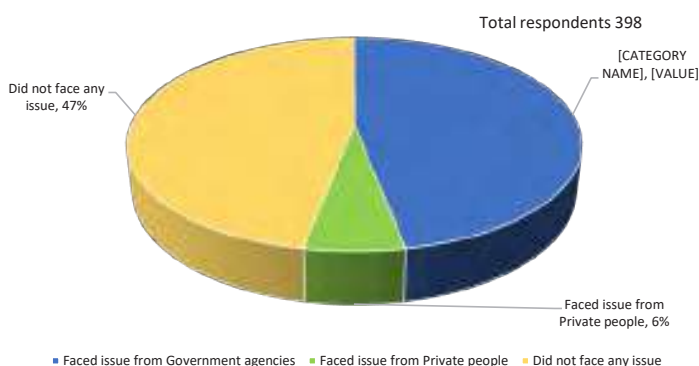
People from whom street vendors face issue

- Forty seven per cent said they faced issues from government agencies, refer Fig. 7.
- Though small, six per cent said that they faced issues from private people. It can be understood from this that non-state, private people are also causing trouble to street vendors.

Awareness of Street Vendors Regarding Protection under Law

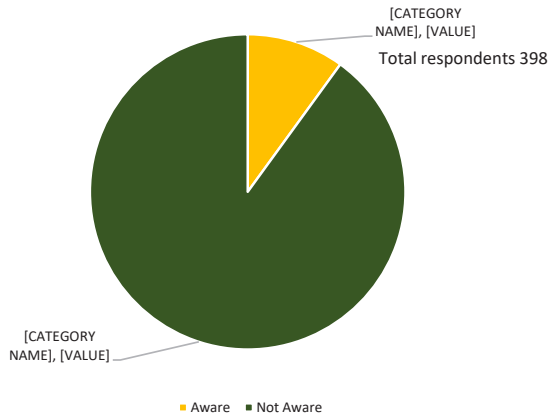
- Ninety per cent (358 out of 398) have said they are not aware of their rights under street Vendors Act, refer Fig. 8.

Fig. 7: People from whom street vendors face issue



Source: Author.

Fig. 8: Awareness of Street Vendors regarding protection for them under law



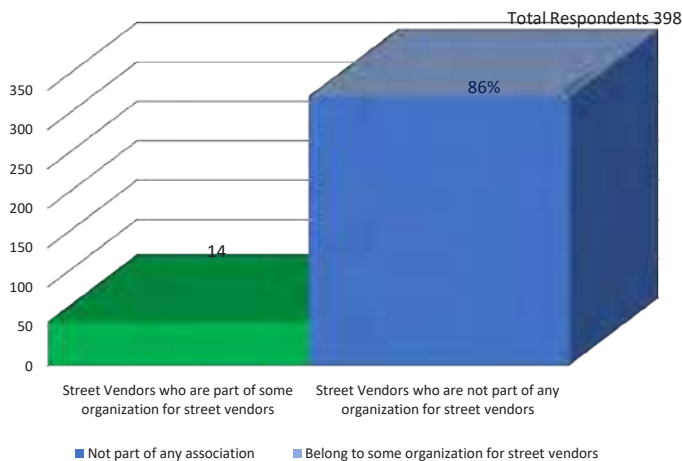
Source: Author.

- There is a massive gap in awareness of the street vendors regarding their rights and schemes of the government.

Street Vendors who are part of any Organisation for Street Vendors

- A massive 86 per cent (342 out of 398) said they are not part of any organisation related to street vendors, refer Fig. 9.
- Only a meager 14 per cent (56 out of 398) said they belong to some kind of organisation for street vendors.

Fig. 9: Percentage of Street vendors who are part of any organisation for street vendors

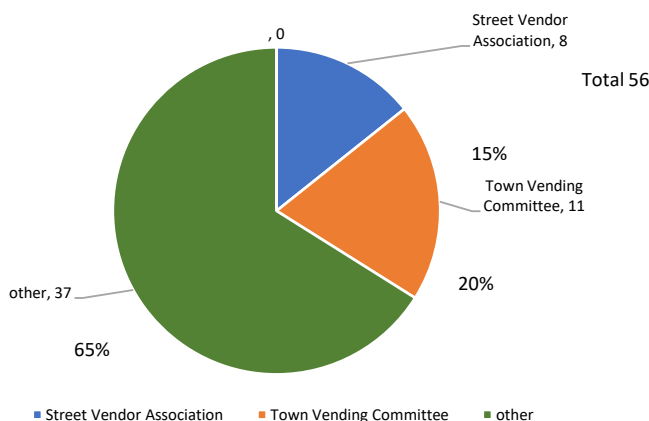


Source: Author.

Different Organisations Street Vendors are Part of

- Out of the 56 people who are part of some organisation for street vendors, 15 per cent (8 out of 56) are part of street vendors association, refer Fig. 10.
- Twenty per cent (11 out of 56) are part of Town Vending Committee (TVC), and
- Sixty five per cent (37 out of 56) are part of other groups or organisations for street vendors, refer Fig. 10.

Fig. 10: Different organisations and Associations street vendors are part of



Source: Author.

Street Vendors in Possession of ID Cards or Certificate of Vending

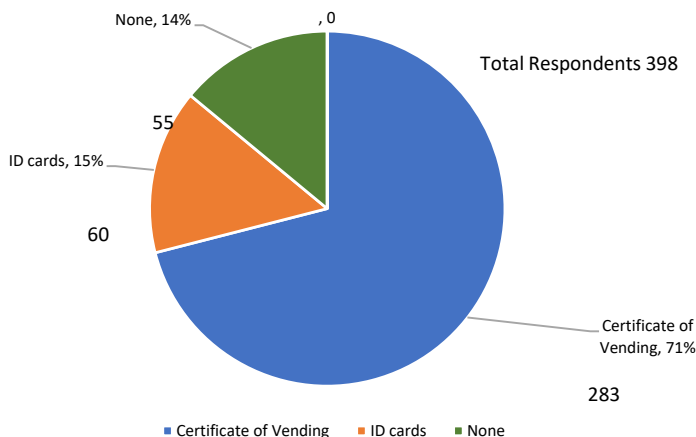
Surveying the street vendors and issuing ID cards or Certificate of Vending as per 2014 Act for protection of street vendors is a very important step in the direction of legal recognition of street vendors. As per GHMC, a total of 1,62,000 (one lakh fifty-two thousand) street vendors Hyderabad Municipal Council have been surveyed and 1,54,000 (one lakh fifty-four thousand) have been issued identity cards. The study found that:

- Seventy one per cent (283 out of 398) respondents had certificate of vending, refer Fig. 11, and 15 per cent (60 out of 398) had ID cards, a total of 86 per cent of the street vendors had government-issued identity cards.
- Only 14 per cent (55 out of 398) did not possess any kind of government issued identity card.

This is a very important milestone achieved by the municipal

authorities as this is the foundation on which any effort to support the street vendors can be extended.

Fig. 11: Street Vendors in possession of ID cards or Certificate of Vending



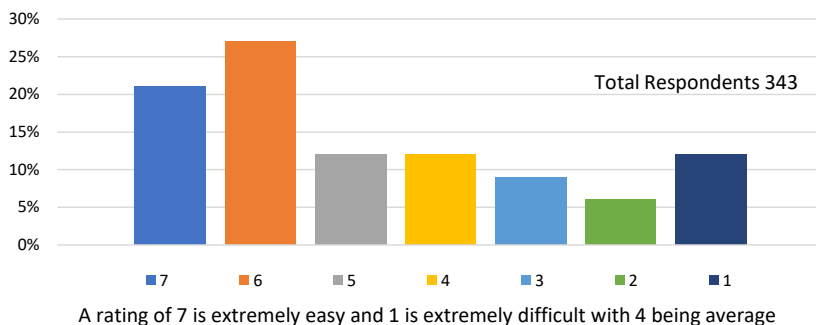
Source: Author

The Extent of ease of application process for ID cards or Vending Certificates

Of the 343 street vendors who had a government-issued ID card or Certificate shown in Fig. 12, on a 7-point Likert scale:

- Twenty eight per cent have rated the application process 7, which means extremely easy, refer Fig. 10.
- Twenty two per cent have rated it 6 which mean to them is very easy. In free-wheeling chat, they have revealed that the municipal authorities have themselves conducted drives to issue ID cards and have come down to their stall, took their details, and issued ID cards.
- Thirteen per cent found the process to be easy and nine per cent have found the process to be average.
- A total of 72 per cent have found the process of applying to be average to extremely easy, while 28 per cent have found the process difficult to extremely difficult. 72 per cent respondents finding the process to be average to extremely easy is commendable.

Fig. 12: The Extent of ease or difficulty in applying for ID card or Certificate of Vending on a 7-point Likert Scale



Source: Author.

- The average number of days in which identity cards or certificates were issued is 34.
- The maximum number of days is 150 and minimum is 10 days.

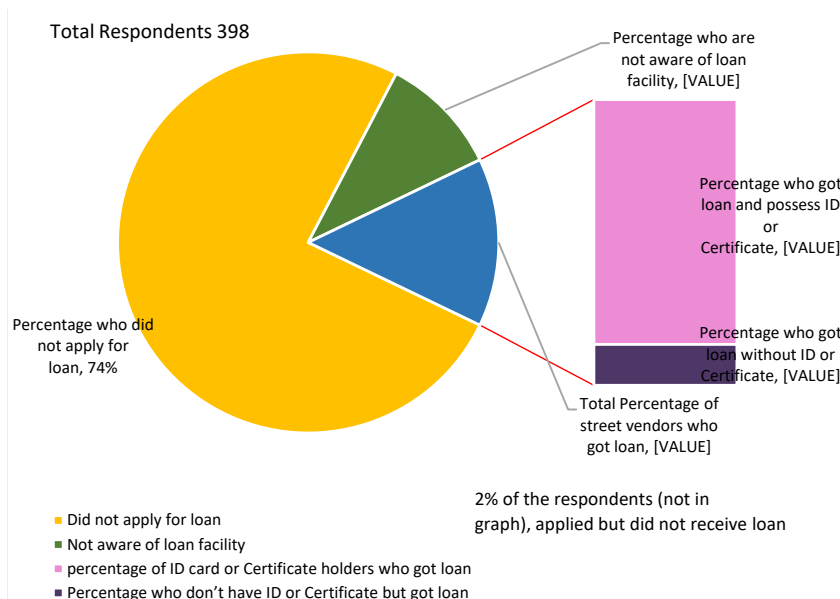
We can observe that the average time for issuance of ID cards is way closer to the minimum number of days for issuing the same. The time taken to issue ID cards or certificates is very reasonable overall.

Loans under PM SVANidhi Yojana: Percentage distribution of street vendors w.r.t loan application and sanction

- Sixteen per cent (64 of 398) have applied for the loan, refer Fig. 13. 14 per cent (56 of 398) have received the loan. This is a massive success as 88 per cent of those who applied have got the loan.
- One per cent (4 out of 398) did not receive the loan, while another one per cent (4 out of 398) had loan sanctioned but not disbursed yet.
- Two per cent (8 out of 398) of the respondents who received the loan did not possess any kind of identity proof. Interestingly, the PM SVANidhi Yojana mentions that even those without valid proof of identity would be considered for loans under this scheme provided they were surveyed by TVCs. Clearly, this provision of the scheme has helped two per cent of the street vendors, that is 14 per cent of the total beneficiaries of the scheme.
- Seventy four per cent of the respondents have said that they

did not apply for the loan, 10 per cent said they were not aware of the loan facility.

Fig. 13: Percentage distribution of street vendors w.r.t loan application and sanction



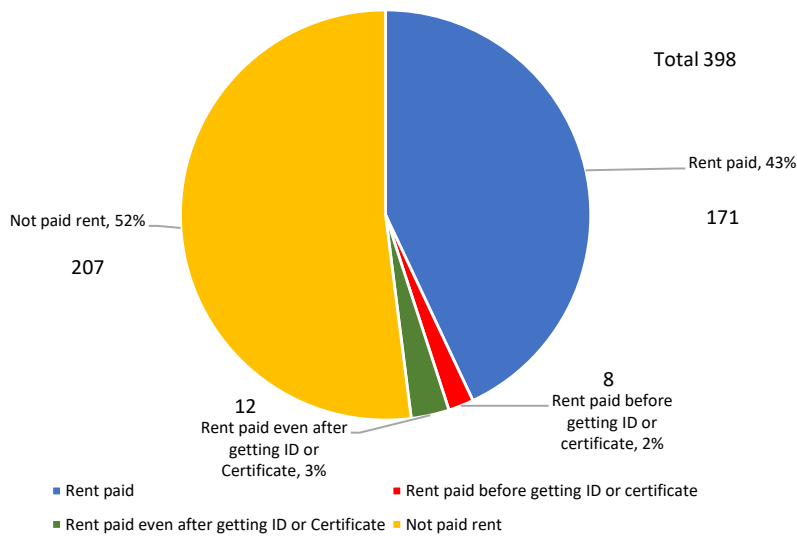
Source: Author.

Rent Payment by Street Vendors

Though the issue of rent payment is beyond the scope of PMSVANidhi Yojana whose purpose is provision of micro-finance, the study has included this issue as it is flagged by significant number of respondents.

- Forty three per cent (171 of 398) have said that they paid rent to run their business, refer Fig. 14.
- Two per cent (8 out of 398) have said that they paid rent before they got ID card or Certificate, while three per cent (12 out of 398) have said that they paid rent even after getting ID card or Certificate.
- So, a total of 48 per cent have paid rent at least once, while 46 per cent (183 of 398) say they pay rent irrespective of ID card or Certificate.
- Fifty two per cent have not paid any kind of rent to run their business.

Fig. 14: Rent Payment by Street Vendors



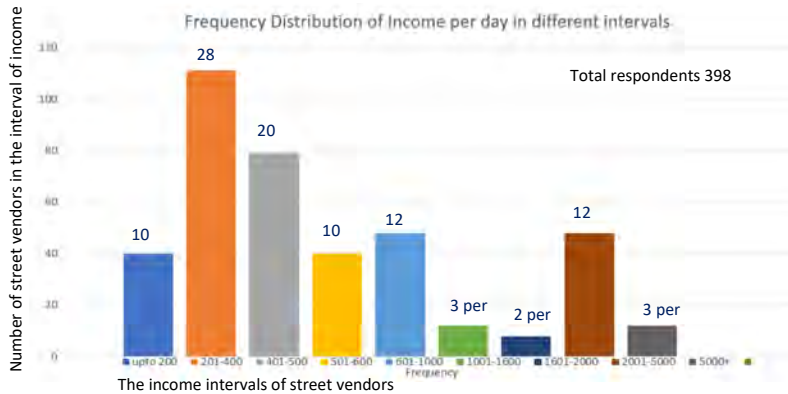
Source: Author.

Frequency Distribution of Income per day earned by Street Vendors

- The average income per month of all street vendors is Rs. 31,026 (thirty-one thousand twenty-six rupees), refer Fig. 15.
- The average number of days a street vendor works is 28 with an overwhelming majority working entire 30 days a month.
- Eighty per cent of the street vendors earn below Rs. 1000 per day.
- Forty eight per cent of the street vendors earn between Rs.200 and Rs.500 per day.
- Fifteen per cent of the street vendors earn above Rs. 2000 per day.
- To better understand the income of street vendors, the vast majority of 80 per cent of street vendors who earn up to Rs.1000 per day are considered for analysis.

The average monthly rent paid by the street vendors earning up to Rs. 1000 per month is Rs. 900. The average monthly income of street vendors who earn up to Rs. 1000 per month (they constitute 80 per cent of the total respondents) is Rs.12,574. The percentage of income lost per month due to rent payment is seven per cent which is a considerable amount. Only 15 per cent of the people earn above Rs. 1000 per day

Fig. 15: Frequency distribution of income per day in different intervals



Source: Author.

and 12 per cent earn between Rs. 2000 to Rs. 5000, this bracket of street vendors would not be adversely impacted due to rent payment.

The perspective of the street vendors and the support they expect from government

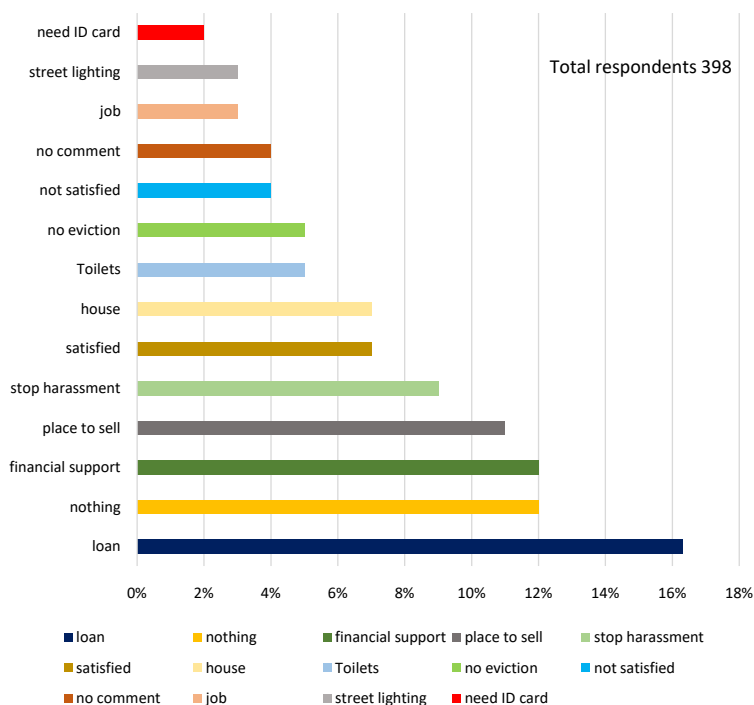
From the free-wheeling chat with street vendors the following are the issues of importance:

- Sixteen per cent of the respondents said that they need loan, refer Fig. 16, followed by 12 per cent who wanted some kind of financial support from government through subsidies or education loans.
- Interestingly 12 per cent said that they want nothing and they are good as they are.
- Eleven per cent said they want “a place to sell” their goods. Nine per cent of the respondents said that they don’t want harassment.
- Seven per cent of the respondents said that they are satisfied with how they are able to carry out their business, while four per cent said they are not satisfied.
- Five per cent each said they want toilets and don’t want eviction. Four per cent refused to comment. Three per cent each said they want alternate jobs and street lighting. Two per cent said they want ID cards.

These percentages are not indicative of the percentage of street vendors facing these problems. In a freewheeling chat, when we asked

Fig. 16: Issues flagged by Street Vendors

Most pressing issues faced by Street Vendors



Source: Author.

them what they wanted from the government, they would come up with the most important thing they wanted. It can be seen clearly from the graph that securing loans is the most pressing issue for 16 per cent of the people only and so on.

OBSERVATIONS AND SUGGESTIONS

PM SVANidhi Yojana clocks a massive success rate of giving loans to 88 per cent of the respondents who applied for loan by ensuring that no street vendor who wants a loan would be left out. The thrust for increasing digital transactions is a win-win for both the street vendor and the customer. By making microfinance available for street vendors without collateral, PM SVANidhi Yojana has effectively minimised the dependency of micro-entrepreneurs on private financiers who charge high interest rates. However, the study tries to bring out all the issues faced by street vendors and suggest possible areas that can be addressed by future policies.

Our study brings out the huge difference between participation

of women and men in street vending. Only 17 per cent of the total respondents are female. Increased participation of women in every field is essential to empower women to gain financial freedom. Measures need to be taken to make public spaces safer and more conducive for women to carry on street vending.

Our study reveals that 44 per cent of the total respondents have faced eviction. During the freewheeling chat, one of the major concerns raised by the street vendors is to stop eviction and to show them a place to sell their goods. This shows that the street vendors are willing to change location if the authorities show them a place to sell their goods.

One of the major findings of this study is the massive lack of awareness and lack of organisation among street vendors. 90 per cent of the street vendors do not even know that they are protected by law. 10 per cent of the street vendors did not even hear about PM SVANidhi Yojana and did not apply for loan. They wanted the government to take steps to ensure the information reaches them. One of the reasons for this lack of awareness can be because of the vast majority of 86 per cent not being part of any organisation for street vendors.

Street vendors who earn up to Rs.1000 earn an average of Rs. 12,574 per month and pay an average monthly rent of Rs. 900 which is a loss of seven per cent. For a paltry income of 12,574 per month in a city, a loss of seven per cent is huge. If the authorities could work out on a solution to stop rent collection, street vendors would be greatly benefitted.

We contacted GHMC officials on the issue of harassment and rent collection of street vendors. GHMC officials said that under the Dispute Redressal System there is a grievance redressal committee at the state level and at the district level under the district collector. Any street vendor who has a grievance has to complain to the grievance redressal committee in writing and the committee will conduct enquiry and revert within 30 days.

It is good that systems are in place for grievance redressal of street vendors. However, governance should reach the doorstep of the beneficiary to the extent possible. Rarely does a street vendor has the courage to approach a district collector or state level committee to complain about the average Rs. 900 per month rents paid by them. While it is commendable that such high authorities are placed in charge of grievance redressal of street vendors, the solution largely lies in ensuring that those who possess valid ID or Certificate are not harassed and those non-state actors who trouble street vendors be brought to book.

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BOOK REVIEW

Blue Infrastructures: Natural History, Political Ecology and Urban Development in Kolkata, by Jenia Mukherjee. pp. 256 (Springer Nature, Singapore), ISBN 978-981-15-3950-3, Price: 5,007.00 (Paperback)

Urban communities around the globe are confronting with ever-expanding challenges. These challenges are being driven by, and exacerbated by, increments in urban population and environmental change. Urban areas grow perseveringly while fears of an unnatural weather change and ecological calamity loom ever more prominent, and the 'green' or 'sustainable city' is playing a significant role in planning and policy discourse to manage the emerging situations. In this context recently published book *Blue infrastructure: Natural History, Political Ecology and Urban Development in Kolkata*, by Jenia Mukherjee takes a 'longuedurée approach' to deal with catching the dynamicity of the delta through nuanced investigations of the steady exchange among land, water, and mud. It uncovers how this space could decide, and thus get dictated by, political power, finance, and social livelihoods across changing temporal directions and moving towards political-financial goals that convey long-term suggestions for sustainability. The author has used 'Historical Urban Political Ecology' (HUPE) as a perspective to contextualize the "urban nature" with special reference to Kolkata and beyond.

The Urban Political Ecology (UPE) perceives that the material conditions that encompass urban environments control, manipulate and serve the interests of the elite to the detriment of marginalised population. It gives a focal point through which to investigate the both – urban areas and things in urban areas. Therefore, urban political ecology gives an integrated and relational approach that unravels the interconnected monetary, political, social and biological cycles that together profoundly shape lopsided uneven landscape. The book broadly follows this thought and brings up an issue on 'urban nature' of Kolkata and its progressive turn of events.

From 'Blue Infrastructure to Disrupted Networks'

The book breaks down the trajectories of urban development of Kolkata into nine chapters. In the introductory chapter, the author brings up the issue about the pertinence of planning Kolkata's blue infrastructure and argues that the "blue infrastructures" of Kolkata offer the mind boggling story of co-development and co-functioning of hard, delicate, and ecological frameworks that advance broadly over time across tangled interactions among city, nature, and innovation. The second

chapter explores the 'imperial infiltration' in the delta and focuses on the foundation of Kolkata as site of trade for colonial power. In addition, it explains how the site offers ecological advantage to imperial forces to conquer the site over situation. The site was marked initially as 'unhygienic and wild' by the colonizer. Apart from the wide scope of environmental advantages that the site offered, the author also argued the site was relatively free from the official impedance which had tormented the colonial infiltrators at every other spot in Bengal.

After explaining the foundation of Kolkata, the author delves into the interventions of colonial power to the hydrology of delta. The colonial interventions came in the form of canals, and (salt water) lakes, artificial cuts and excavations, construction of pumping stations, lock gates, sluices, mortar sewers, and elaborate projects of drainage and reclamation of marshes. She argues that the whole framework had been developed as an incorporated device to deliver the colonial urbanization ventures. Networked infrastructures were structured and executed as significant routes of trade and urban utilities, meeting the expanding needs of the planned metropolis in the most cost-effective mode. Moreover it is highlighted that how selected site was slowly tamed, controlled and meddled with, keeping pace with the development of the universal laws of colonial hydraulics. This prompted the advancement of networked infrastructures in the form of an extensive (eastern) canal system in Kolkata. This canal system all the while also encouraged trade, transportation, and waste, sewerage, and sanitation.

To understand the untamed practices (Sewage treatment, fishing, dump yard, heavy metal removal, biodiversity, Fishing and flood control) within the networked infrastructure in Kolkata, the author focuses on East Kolkata Wetland (EKW), which is a significant part of the cities blue as well green infrastructure collectively; it can be called as 'turquoise infrastructure'¹ (Childers et al. 2015)² She highlights the ecosystem services created by these wetlands, which has an inferred 'subordination-domination framework' rooted in it; here, the wetlands are understood to be operating both as an output and an input, produced and required by the city. In addition, the author mentions that it is essential to recognize that EKW is "tightly bound to urban fabric and performance" and the working of both the city and its wetlands relies upon the mutually reinforcing sustainable flows between these two associated, interconnected, and embedded entities.

After exploring untamed practices and its contemporary challenges, author examines the disrupted networks (canals) in which she shows how navigable canal in the city turns into *nullahs* (a degraded canal) over the years. It was pointed out that after Independence, the canal

system of Kolkata gradually began to be used as sewage disposal sites and there is no recorded history that points out the specific time period when trades in the canal stopped functioning. In addition, it is noted that a significant reason behind the degradation and disruption of the canals is, "Heavy siltation and inadequate maintenance of the channel outfall structures resulting in a significant reduction in the hydraulic capacity of the sewerage system". This has resulted into the recurrence of flood in the city after moderate rainfall. The contemporary disturbance of the canal network is proceeded with tradition of the late colonial period, with the extra components of demographic pressure, nature of effluent, and development interventions (Construction of Metro Rail over the *Adi Ganga*) obtuse toward natural and social expenses.

Disruption in the cities' networked infrastructure has been incited by numerous things noted previously. Consumption of space in the form of townships has been highlighted in the sixth chapter of the book. Here, author sequentially shows the rise and advancement of projects in the eastern outskirts of Kolkata in the post-Independence period, concentrating on the four integrated township projects: Salt Lake, Baishnabghata-Patuli, East Calcutta Township, and New Town Rajarhat. Subsequently the local realities and global vision for city planning are discussed in the eighth chapter. Various official plans and global intervention through re-development project of canals has also been illustrated.

Beyond the idea of "bourgeoisie environmentalism"

The goal of planning history is to be critical about things that have not gone the manner in which they were proposed, making way for environmental protests, activism, and moving against 'statist development' objectives and planning agendas by non-state actors. With this argument, chapter eight subjectively dissects assortments of environmental activism across conflicting, negotiating, and mediating actors encompassing the protection and restoration of the *Adi Ganga* and the EKW. It entangles "middle class environmentalism" and political ecology perspective capturing multiple motives and intentions among various stakeholders ranging from heritage conservation priorities, to conservation of ecosystem resources for the sake of ecosystem services for both the city and its marginalized ecosystem-dependent communities. Moreover, through two contextual investigations, author argues, why and how it is critical to rise above the "bourgeoisie environmentalism" way to deal with incorporate assortments of urban environmentalism, molded by explicit political conjunctures specifically local settings.

The book certainly catches the intricacy of Kolkata's blue

infrastructure and its implication at large in the population. Be that as it may, there is some inadequacy in the book which has not been addressed adequately. First and foremost limitations are the deficiency of information with respect to the contemporary changes of landuse in the city. Secondly, the book doesn't address the plight of the slum dwellers. Thirdly, the author singularly centres on disruption of blue infrastructure and its political ecology, however it doesn't enlighten the discussion about city as 'engine of economic growth'. More specifically in the post-liberalised world, policy makers conceded that a sustainable city has to be economically viable. But the book fails to point out any such path that addresses economic viability of the city. The next significant issue that the book does not throw any light is about the process of land acquisition. It talks about the development of four townships but very little focus has been given to the process of acquisition. Moreover, demographic and economic change in the city has not been discussed elaborately which was necessary to mention because author talks about the disruption of network at great length but mentions very little about city's economic change and influences of partition in the city. Lastly, when the author discusses the consumption of space in the form of townships through reclamation of wetland, she doesn't mention the role of partition and huge demographic pressure, faced by city immediately after Independence.

However, the book makes a great contribution in the field of urban environmental history and political ecology by shedding lights of the complexities in the urban development process and its evolution. It explores the conflicting rationalities, negotiation and middle-class sentiment on urban environment. Moreover it successfully establishes the fact that the flexibility of Kolkata must be sustained, tackled, and accumulated by improving on her ecological incentives by converging equations among multiple stakeholders beyond conflictual affiliations and positioning.

Footnotes

1. Urban wetlands are both green and blue infrastructure. When one combines green and blue, the result is the color turquoise.
2. Childers, D.L., Cadenasso, M.L., Grove, J.M., Marshall, V., McGrath, B., Pickett, S.T.A. (2015): *An Ecology for Cities: A Transformational Nexus of Design and Ecology to Advance Climate Change Resilience and Urban Sustainability*.

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National Level Events on Urban Development

K.K. PANDEY*

The last quarter of 2021 ended with an important event covering change of guard in the Ministry of Housing and Urban Affairs (MoHUA). Senior bureaucrat Shri Manoj Joshi, IAS, 1989, Kerala Cadre took over the charge from Shri Durga Shanker Mishra (1984 batch, Uttar Pradesh Cadre) as Secretary, MoHUA on 30th December 2021. Nagarlok, Centre for Urban Studies and all IIPA family welcome the new Secretary, during this year of Amrit Mahotsav. Shri Joshi has assumed the responsibility at a crucial time when for the first time union budget has made special reference to the role of urbanisation in the growth story of India during next 25 years. We are sure that Government of India will evolve due strategy for structural adjustment (the expansion of manufacturing and services) and competitive edge which involves cities and towns as enabler of economies of scale, environment friendly, pro-poor, productive and sustainable development.



Shri Manoj Joshi, IAS
Secretary
Ministry of Housing and
Urban Affairs
Government of India

The period of October -December 2021 included (i) Azadi@75- New Urban India: Transforming Urban Landscape' held at Indira Gandhi Pratishthan, Lucknow, Uttar Pradesh (ii) Participation in the Dubai Expo 2020 (began on October 2021) (iii) Major DMRC (Delhi Metro Rail Corporation) initiative on Make in India along with Bharat Electronics Ltd (A Public Sector Enterprise) (iv) Progress on Central Vista Project (V) launch of the national level Association of Water Supply and Sanitation Organization (AWSSAR) (vi) Swachhta APP (VII) Knowledge Sharing. The information compiled below is drawn from MoHUA, its facebook page and twitter.

Azadi@75- New Urban India: Transforming Urban Landscape

Azadi@75- New Urban India: Transforming Urban Landscape was held during first week of October at Indira Gandhi Pratishthan, Lucknow,

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Uttar Pradesh (UP). The MoHUA and Government of Uttar Pradesh anchored the Mahotsav which held exhibitions, seminars, Round Table Discussions on Government of India Missions and state government schemes different states, urban agencies and cities participated in the land mark event which sensitised the urban sector including its role in the covid protocol. Two important events need special mention:

- MoU- between #SECI_Ltd and #MoHUA_India in Lucknow on October 6 2021 with regards to the promotion of Solar Energy Cooperation, waste disposal, reuse and Urban Mobility in the state of Uttar Pradesh at Azadi@75, New Urban India (#TransformingUrbanLand scape).
- Consultative Workshop on Deen Dayal Upadhyay Antyodaya National Urban Livelihood Mission (NULM-2.0)- Way Forward at Azadi@75- New Urban India: Transforming Urban Landscape'.

Participation in the Dubai Expo 2020 (began on October 2021)

Besides other delegates, officials of ministry of Housing and Urban Affairs participated in the international trade affair which is scheduled during October 2021 to March 2022). Three important visits by GoI delegates deserve a mention:

- MoHUA officials met CEO and Co-Founder Virgin Hyperloop, USA on November 03, 2021 in the Expo2020 Dubai and discussed on concept & future of Hyperloop Technology as mode of public transport, its status of transportation in various countries, Social-Economic benefits, etc.
- They also discussed Hyperloop Technology's adoption of GoI's Make In India initiative in the procurement of Hyperloop components, its cost of construction, operation and maintenance and status of various MoUs/Sanctioned Studies/Projects in India.#IndiaAtDubaiExpo
- MoHUA team also visited the DP World Pavilion, a Premier Global Trade Partner of Expo 2020 Dubai, that is being developed in line with the sub-themes of the event- Opportunity, Mobility, and Sustainability. The Pavilion is designed around the theme of 'Making Trade Flow' featuring augmented and virtual reality that will allow visitors to see the real-time movement of cargo across the world and learn how global trade happens and its impact on every aspect of everyone's life every day.

Major DMRC (Delhi Metro Rail Corporation) initiative on Make in India along with Bharat Electronics Ltd)

DMRC to use first indigenously developed 'Universal Train Driving Simulator' and 'Super SCADA' systems from BEL. In pursuance of the Government of India's 'Make in India' policy, Delhi Metro Rail Corporation (DMRC) and Navratna Defence PSU Bharat Electronics Limited (BEL) had signed a MoU last year to develop jointly a 'Rolling Stock Driver Training System (RSDTS)', which will be useful for training drivers of metro/ railway trains.

The first prototype model of the indigenously developed Universal Driver Training Simulator for Rolling Stock (i-UDTS) was inaugurated by Shri. Durga Shanker Mishra, Secretary, Ministry of Housing and Urban Affairs (MoHUA), Government of India, at a ceremony held in BEL's Ghaziabad Unit. i-UDTS is designed as a Line Independent System, easily configurable and scalable for any current and future lines to meet the city metro requirements. The main features of system as per GoI facebook and twitter are:

- Universal Driver Training Simulator for Rolling Stock system is useful for training metro and railway train drivers and also evaluating the driving skills of a working Train Operator, usually done periodically for safety considerations.
- This will be the first indigenously developed universal train driving simulator that can be suitably modified for any metro system or railways. So far, DMRC has been importing this product from foreign OEMs, at a high cost.
- Also, the designs available with DMRC are suitable for use with a single type of rolling stock, signalling and track systems. It is extremely difficult and costly to make any changes at a later date.
- The i-UDTS being developed by BEL for DMRC has the provision for the same core software to be utilized for creating different combinations of rolling stock, signalling and line profiles, by merely changing the input data files, along with minor hardware changes in the driving desk, if required.
- This will enhance the flexibility of the training system and would result in major cost savings for DMRC, as the same system can be used for multiple stocks and different routes.

Progress on Central Vista Project

Central Vista will bring all 51 Central Govt Ministries to 10 Common

Central Secretariat buildings offering proximity & ease of inter-departmental movement to enable more efficient & productive functioning. With a team of 6,944 workers onsite and 3,855 people offsite, the ongoing works at Central Vista Project have already generated 9,08,826 man days of employment so far. Please visit www.centralvista.gov.in to know more about this iconic project.

Launch of the national level Association of Water Supply and Sanitation Organisation

Launch of the national level Association of Water Supply and Sanitation Organization (AWSSAR) by the Ministry of Housing and Urban Affairs, GoI, at a national event in #Bhubaneswar on 27th November, 2021. The launch included:

- More than 60 senior officers from several states and UTs participated in the event. Secretary, MoHUA will be the President of the Association and Principal Secretary, H&UDD Odisha was unanimously elected as its Vice President-cum-CEO.
- #AWSSAR is envisaged to be a co-creation platform for knowledge sharing between public sector water supply and sanitation organisations, parastatal agencies and ULBs engaged in service delivery of water supply and sanitation.
- Later in the day, all dignitaries from various states also visited Puri where Drink from Tap 24x7 water supply is functional and interacted with the citizens and Jal Sathis as part of a learning session to implement in their respective states

Swachhta App

The Swachhta-MoHUA is the official app of Ministry of Housing and Urban Affairs (MoHUA), GOI. The app enables a citizen to post a civic-related issue (e.g., a garbage dump) which is then forwarded to the city corporation concerned and thereafter assigned to the sanitary inspector of the particular ward.

The app has been built by IChangeMyCity – a division of Janaagraha, a Bengaluru based non-profit organisation.

How does it work? Take a picture of the Civic-related issue using your smart phone, and post it in one of the twelve categories. These are Garbage dump, Garbage, vehicle not arrived, Dustbins not cleaned, Sweeping not done, Dead animals, Public toilet(s) cleaning, Public

toilet(s) blockage, No water supply in public toilet(s) and No electricity in public toilet(s)

The app captures the location while the picture is being taken. Just type in the landmark of the complaint location. The complaint will then be assigned to the concerned sanitary inspector/engineer.

Knowledge Sharing

Important events on dissemination of knowledge and information during the last quarter cover:

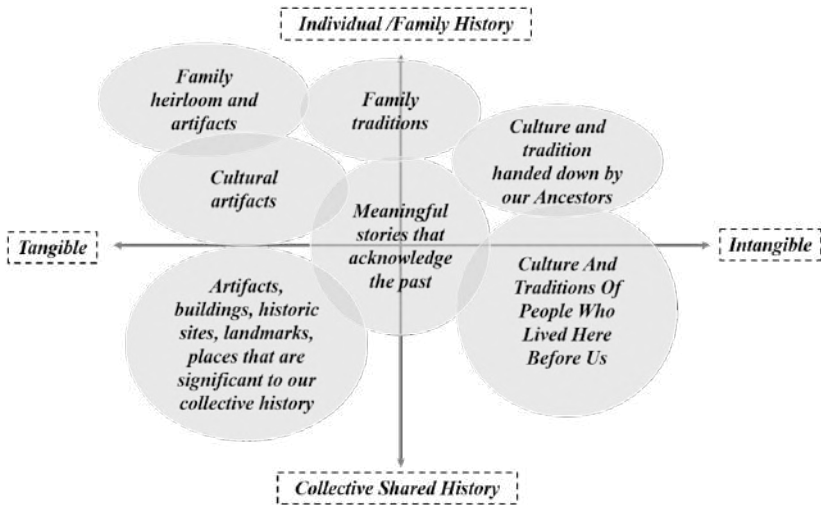
- The River Cities Alliance an initiative by #NamamiGange and national Institute of Urban Affairs to sensitise people towards rivers across 30 cities in India was shown in the media on November 2021.
- On the occasion of Divyangjan on the International Day of Persons with Disability Day – December 04 2021, an event to Mainstream Disability Inclusion, the ‘Harmonised Guidelines and Standards for Universal Accessibility in India 2021’ were released.
- National Urban Digital Fellowship programme was launched to have digital transformation in governance in cities (December 10, 2021).
- A book on Nurturing Neighbourhoods –Stories in the Field was launched highlighting success stories from 25 cities in the phase 1 of the streets for city challenge on 11 December, 2021.
- ‘Swachh Technology Challenge’ 2021 was launched on to encourage citizen engagement in waste management and promote tech innovations. 6th India.
- Water Impact Summit 2021 on River Resources Allocation “Planning and Management at the Regional Level” was organised on December 05, 2021.

Urban Heritage Management Scenario in India

KUSUM LATA*

Heritage is full range of our inherited tradition, monuments, objects and a culture. Most important it is a range of contemporary activities and behavior that we draw from them. Dimensions of heritage are summarised in the Fig. 1. Heritage is a broad and a dynamic concept which includes the cultural as well as natural environment. It encompasses built environment, historic places sites, landscapes as well as biodiversity, knowledge collection of past and different cultural practices and living experiences. It is a point of concern and positive tool for growth and change. Heritage is a collective memory of each locality and community. Heritage provides emotional and intellectual platforms on which individuals and communities establish their identity.

Fig. 1: Dimensions of Heritage



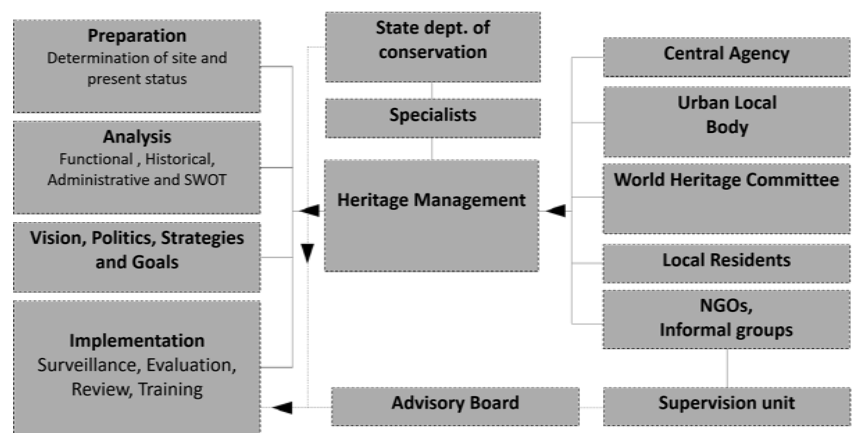
Heritage Management

An effective management system depends on the type, characteristics and needs of the heritage city and its cultural and natural context. Management systems may vary according to different cultural perspectives, the resources available and other factors. They may incorporate traditional

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practices, existing urban or regional planning instruments, and other planning control mechanisms, both formal and informal.

Fig. 2: Heritage Management Process, UNESCO

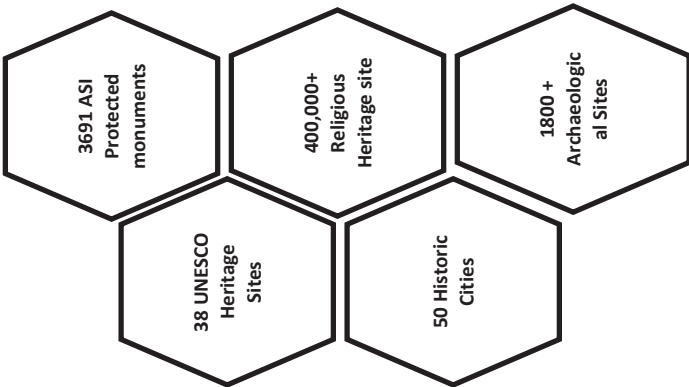


Heritage Management is an important tool for proper preservation of heritage resources. The purpose of an appropriate heritage management mechanism is to ensure effective protection of cultural and heritage properties for the benefit of present and future generations and also to maintain the authenticity and integrity of the properties to the maximum possible extent.

Urban Heritage

India’s heritage assets are unmatched in the world with 5,000 years of history, 22 official and 1,000+ minor languages, around 200 million craftsperson’s, countless traditional skills, cultural practices and performing arts, 30 World Heritage Sites, and tens of thousands of

Fig. 3: Snapshot of Heritage in India



monuments, historic areas and sacred sites spread over highly diverse natural and built landscapes. Among India's rich repository of heritage sites and monuments, of the protected ones include 30 (of 38) cultural edifices declared as World Heritage Sites by United Nations Educational, Scientific and Cultural Organization (UNESCO), and approximately 3,691 monuments in the custody of Archaeological Survey of India (ASI) declared as monuments of national importance.

Despite the efforts, a number of heritage structures do not come under any formal system due to lack of infrastructure and funds. These unprotected monuments and heritage structures are brought to public notice and listed mainly due to the intervention of Non-Governmental Organisations. Between the demarcation of Protected and Unprotected, this heritage of India is facing serious conservation, preservation, maintenance and management challenges.

Key Efforts and Organisation of Heritage Management in India

TABLE 1: KEY EFFORTS AND ORGANISATION OF HERITAGE MANAGEMENT

<i>S no.</i>	<i>Acts</i>	<i>Year</i>	<i>Rationale</i>
1	Ancient Monuments Preservation Act	1904	• Expedient to provide for the preservation of ancient monuments, for the exercise of control over traffic in antiquities and over excavation in certain places.
2	Ancient Monuments and Archaeological sites and Remains Act	1958	• All the ancient and historical monuments and archaeological sites and remains protected earlier under 'AMPA, 1904' (Act No. VII of 1904) were re-declared as monuments and archaeological sites of national importance under this Act. • Another four hundred and fifty monuments and sites of Part 'B' States were also added
3	The Antiquities and Art Treasures Act	1972	• The Act is to regulate the export trade in antiquities and art treasures, to provide for the prevention of smuggling of, and fraudulent dealings in, antiquities, to provide for the compulsory acquisition of antiquities.

(contd.)

4	The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act	2010	• Establishment of National Monuments Authority on 11th Nov 2011 • Redefinition of 100m as prohibited zone & 100-300m as regulated area around the monument. • Categorisation of monuments into 8 categories • Framing of heritage bye-laws for each of the centrally protected monument
<i>S no.</i>	<i>Organisations</i>	<i>Year</i>	<i>Rationale</i>
1	Archaeological Survey of India	1861	• Preservation, conservation and environmental development of centrally protected monuments and sites, including world heritage monuments and antiquities.
2	National Monuments Authority	2010	• Has been setup under AMASR (Amendment and Validation) Act, 2010. • One of the major functions are to protection and preservation of monuments and sites through management of the prohibited and regulated area around the centrally protected monuments.
<i>S no.</i>	<i>NGOs</i>	<i>Year</i>	<i>Rationale</i>
1	Indian National Trust for Art and Cultural Heritage	1984	• Instill a sense of social responsibility towards preserving India's common heritage and to protect and preserve India's living, built, and natural heritage
<i>S no.</i>	<i>Schemes</i>	<i>Year</i>	<i>Rationale</i>
1	JNNURM – CDP formulation for heritage cities	2005	• Listing of heritage, Identification of heritage zones and assessment of heritage, Legal and statutory framework, Infrastructure and financial arrangement
2	Heritage City Development and Augmentation Yojana - HRIDAY	2015	• Preserve character of the soul of heritage city and facilitate inclusive heritage linked urban development by exploring various avenues including involving private sector.

Among these Urban Schemes, HRIDAY was the first ever Urban Development Scheme completely focused on Heritage in 12 cities and 100 per cent centrally funded. SMART Cities is another Scheme that covers major funding for urban heritage across India including surroundings of several centrally protected and State level monuments. One of the major issues in the following above mentioned act/ policy/ scheme lacks an efficient institutional arrangement to support sustainable management of Heritage.

Key Issues in Urban Heritage Management

TABLE 2: ISSUES IN URBAN HERITAGE MANAGEMENT

1. Planning and Toolkit	Heritage Projects need to be synced with the planning of the city and merge with typical historic character in different areas of the city. This was successfully achieved to a large extent in HRIDAY with preparation of a City HRIDAY Plan and a special HRIDAY Toolkit for street furniture design in different historic parts of these 12 cities. However, this aspect is missing in a number of historic city areas being undertaken via Smart City Scheme.
2. Sustainability	Final success of urban projects is dependent on their long term sustainability in all aspects- environmental, socio-cultural and economic. It needs to be ensured that no proposed project is impacting the natural or cultural heritage of the city, rather it should be enhancing these aspects.
3. Stakeholder Consultation	Community inclusion and ownership is essential for their use and maintenance and inclusion of all the local and national stakeholder is must for protection and efficient management of heritage.
4. Lack of Heritage Cell	Local bodies involved in urban heritage projects are often not equipped enough to handle heritage conservation. Formation of a Heritage Cell, Model Bye laws by MoHUA and regular Heritage training programs are essential to remove this gap.
5. Community Participation	One of the major challenges in heritage conservation is to win the trust of local communities so that they come forward and cooperate as many a time it has been observed that many conservation processes have been stopped due to local resistance and such kind of challenge can only be overcome if the conservation plans and policies can benefit the local community people and it is not happening often in India.

(contd.)

6. Improper Heritage Management and lack of basic Tourists' Facilities	Another problem that is affecting many of the heritage sites in India is the absence of the proper solid waste disposal mechanism. Moreover, the basic tourists' facilities such as proper sitting arrangements, availability of drinking water, clean and eco-friendly toilets, trained professional guides, interpretation centers are also absent in many places. If more and more heritage resources can be connected with good infrastructure and tourism, these sites can even earn more revenue that will facilitate the local community and can be spent on overall destination development.
7. Lack of Comprehensive Development Planning	Heritage monuments like Jagannath Temple in Odisha and cluster of monuments in Hampi, Karnataka are facing continuous negligence from the host community and local administrations while adopting a comprehensive development plan. Many consider that if the ancient heritage monuments were being surrounded with landscaped grassed flowered parks, its beauty might have enhanced several times. However, many of the recently renovated heritage monuments like Somnath Temple in Gujarat are being ruined by the uncontrolled and haphazard growth of shops, restaurants, human residences, illegal constructions etc. in its periphery.
8. Encroachment	As a record in CAG report, there are 249 encroachments within the protected monuments and there are approximately 955 living monument. May it be the (a) land encroachment by immigrants or by local authorities, or the (b) residential or commercial encroachment and encroachment of monuments; the Indian Government and ASI both have failed abjectly in both cases to control the proliferation of encroachment cases in heritage sites.
9. Pollution	Pollution is gradually increasing at different heritage sites and maximum pollutions are created by visitors and locals, who due to their apathy, negligence and lack of civic sense throw several types of biodegradable and non-biodegradable materials everywhere and unfortunately, many a time the authorities or the monitoring bodies also do not care proper disposal due to lack of interest, fund or priority.

From the States: Engaging Citizens for Leveraging Socio-cultural Life in City Development Programmes

SACHIN CHOWDHRY*

In India, urban areas started receiving focused attention starting this century with the realisation that cities contribute significantly to the economic growth. However, the interventions initially were response to lack of basic infrastructure across the country. It was understandable because a large population in the cities did not have access to even basic services like drinking water, sewerage, solid waste management, etc. As the population in the cities grew and estimates showed that it would grow even further with the economic development, both the Central Government and the various state governments prepared road-maps for meeting all concomitant challenges. The city governments were also given and assumed important role in the endeavour.

While the focus of the above such efforts was on creations of large infrastructure and provision of various services to citizens by leveraging technology, some municipalities have taken initiatives in engaging citizens with their programmes. Such efforts also saw reviving of socio-cultural aspect of city life. Some of the initiatives are given below.

Raahgiri in Gurgaon

Raahgiri Day- 'Apni Rahen, Apni Azadi', completed one year in November, 2014 in Gurgaon. This was a non-municipal initiative conceived by Raahgiri foundation consisting of local habitants from five organisations EMBARQ-India, I AM Gurgaon, Heritage School Gurgaon and Duplays Gurgaon encouraging citizens to cycle. The success of the event got authorities of Gurgaon to initiate plans of installing cycle tracks in the city covering an area of eight km. from HUDA city Centre to Golf Course Road Extension. The organisers aimed at having pedestrian and cycling friendly infrastructure laid over the entire city and to have safer roads for all.

During the events, a lot of cultural events like rock concerts, shows by different entities and groups, etc. were organised. Corporates also chipped in with their contributions. Some of them sponsored some events and some organised them on their own.

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Raahgiri Days in Delhi

Success of Raahgiri in Gurgaon enthused the organisers to bring this initiative to New Delhi Municipal Council (NDMC) area. It closed streets to cars to convey the message of sustainable and active transport. In Delhi the NDMC together with Delhi Police Department took the lead in hosting car free Sundays in the inner circle of Connaught place each week beginning 13th July, 2014.

The event was very successful, which can be gauged from the fact that starting with a turn out of 5000 people on first Raahgiri day, it grew to 20000 people a year after. Moreover, the event expanded to Dwarka, Rohini and East Delhi areas as well. The important aspect was that municipal bodies and the Police Department, became the face of the events.

Sunday for Srinagar

According to a 2015 survey conducted by London-based City Mayors Foundation, Srinagar figured at 92nd place in the global ranking of fastest growing cities. Besides that it is an important tourist destination. The city faced acute problem in managing its Solid Waste (MSW). While the rate of waste generation was increasing, the municipality was finding it difficult to find a proper landfill site. *Kashmir Observer* (April 24, 2021) noted that due to massive urbanisation and population growth, during the last 10-15 years the Srinagar Municipal Corporation (SMC) was not been able to acquire 10 to 15 hectares of land for creating an alternate landfill site as the existing site at Achan had already been overflowing.

Unlike in Gurgaon and Delhi, where the plan for encouraging people to cycle to contribute their bit to combat the problem of pollution was conceived by a non-governmental agency, Srinagar Municipal corporation (SMC) launched 'Sunday for Srinagar' Campaign in March 2021 on its own. It started with raising awareness among people about the importance of managing the wastes appropriately. The SMC started carrying out special cleanliness drive on Sundays besides implementing the SWM Plan of the SMC on a regular basis.

This municipality driven initiative now focuses on several aspects of city life like plantation, awareness, cleaning bad spots, water; bodies, embankments and litter free spots at different places in the city. The campaign saw participation of senior officials of the SMC including the Mayor and the Commissioner. The aim of Sundays for Srinagar is to create awareness about managing solid waste plus undertaking cleanliness drives on every Sunday in different parts of Srinagar city. The sanitation staff of SMC, volunteers from NGOs, public spirited

individuals are part of the campaign. This has gained media and public attention after the Mayor and Commissioner SMC have been actively participating in these programmes.

Gradually, it started getting the participation of senior most officials of other departments as well which had a stake in the city, like the Department of Tourism. People from various walks also joined the initiative.

CONCLUSION

Citizens can be mobilised by all authorities which want them and which, in fact, may reduce the cost of implementation of various programmes. This people buy-in strategy has proven to be successful in many other countries. It would be particularly easy in areas where people can enjoy togetherness. As found out by the United Nations Sustainable Development Solutions Network, India ranks 136th among 150 countries that were ranked on the World Happiness Report. India's position has marginally improved by three notches from last year's 139th rank. The above three cases saw participation from people living outside the area as well, indicating the social value of the strategy. The cultural events organised during the period attracted people and motivated them to participate.

Enrique Penalosa, the former mayor of Bogota, Colombia, who participated in the first anniversary of the Raahgiri Day in Gurgaon, while listing the most important amenities that help improve the quality of life in a city, said that the prime focus should be on developing parks, cycle tracks, footpaths, facilities for the elderly, differently abled and poor. He said, "The poor who use the non-motorised transport, are contributing to the environment. However, the rich are making it worse by using their vehicles. Thus, those who use non-motorised transport should feel proud and not inferior".

Covid affected the organising of such events but now it seems to be receding. The cities may plan now for further leveraging the citizens' engagement in many other for their developmental programmes.

Green Urban Mobility Initiatives in India

AMIT KUMAR SINGH*

The future of India's vibrant and rapidly growing cities largely depends on an efficient, reliable and safe transport system. In the last few decades our cities have witnessed tremendous growth in private vehicles. Unfortunately it has turned into increased vehicle population, congestion on city roads, and lack of public space along the road side. In fact the rapid growth in vehicle numbers needs to be supported by an efficient, reliable, safe and green transport system in the long term. At present cities of India are amongst the worst affected in terms of air pollution. As per World Air Quality Report, 2019 six out of ten most polluted cities worldwide are located in India including Delhi, which is ranked as the world's most polluted city. It is thus necessary to focus on mass public transport systems, non-polluting modes, and pedestrian friendly transport network to achieve safer and healthy cities.

The Government of India had accepted the magnitude of the urban transport problems and led out the National Urban Transport Policy (NUTP), in 2006 to regulate the transportation planning in Indian cities. It was further revised in 2017. The NUTP along with AMRUT as well as Smart Cities Mission aimed to fund urban infrastructure projects towards advancing equitable urban mobility, smart mobility and reducing congestion. In lieu of that this column presents three good practices that have been implemented by different ULBs in the recent times. Each good practice highlights how that particular urban green projects helps cities to achieve the vision of Green Urban Mobility.

Ministry of Heavy Industries (MHI) supports 2,31,257 Electric Vehicles under Phase-II of FAME India Scheme till 1st February, 2022

To promote the production of green fuel based vehicles in India, the Ministry of Heavy Industries, GoI implemented its flagship scheme 'Faster Adoption and Manufacturing of Hybrid and EV (FAME)' scheme in 2015. This scheme provides subsidies for electric based two and three wheelers, hybrid, e-cars and buses. The scheme has 4 focus areas i.e. (i) Technology development, (ii) Demand Creation, (iii) Pilot Projects and (iv) Charging Infrastructure. The phase-I of the scheme commenced in 2015 and implemented for a period of two years i.e. FY 2015-16 and FY

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2016-17 commencing from 1st April 2015. In the 1st phase of the scheme, about 2.8 lakh EVs were supported with total demand incentives of Rs. 359 crore. Through this scheme 425 electric and hybrid buses were sanctioned and deployed across various cities in the country under first phase of the scheme. The Ministry of Heavy Industries had also sanctioned about 520 Charging Stations/ Infrastructure for Rs. 43 crore (approx.) under Phase-I of FAME-India Scheme.

Recently MHI has implemented FAME-II for a period of 3 years, effective 1st April 2019 with a budget allocation of 10,000 Cr which includes a spillover from FAME-I of Rs 366 croer. Under this Phase-II of FAME India scheme, 2,31,257 Electric Vehicles have been supported till December, 2021. Further, MHI has sanctioned 6315 e-buses to 65 cities/ STUs/CTUs/ State Govt. entities for intracity and intercity operations across 26 states/UT under the Scheme. The Ministry has also sanctioned 2877 charging stations in 68 cities across 25 states/UTs under FAME India (Faster Adoption and Manufacturing of Hybrid & Electric Vehicles in India) Scheme Phase II. A Large number of Original Equipment Manufacturers (both starts up and established manufacturers) have been registered and revalidated their 106 electric vehicle models under the scheme. This scheme has helped the sale of electric two wheeler vehicles in the country as their number has increased manifolds during the current year as compared to the previous year.

Another benefit of this scheme is that it has created a large number of employment opportunities in the country. As per the Society of Indian Automobile Manufacturers (SIAM) Report, the Auto Industry generates employment of 13 persons for each truck, 6 persons for each car and four persons for each three wheelers and one person for each two-wheeler, which is quite remarkable.

Boost up to the Go green Mission as South Delhi MC and New Delhi Municipal Council decided to get 40 and 100 solar-powered cycle points in their zone by March 31, 2022

Since the rising fuel price is a major concern for India thus there is an urgent need to search for alternative fuel resources. Our policy makers are now focusing on solar bicycle which is an electric vehicle run on solar energy and provides an easy mode of communication to our city dwellers. Since India is blessed with nine months of sunny climate thus scope of solar bicycle is very bright in India. Thus solar hybrid bicycle can become a very vital alternative to the fueled automobile thus its manufacturing is essential.

Looking at the great opportunities of solar energy based bicycles,

South Delhi Municipal Corporation (SDMC) as well as North Delhi Municipal Corporation (NDMC) have launched a project to install hi-tech cycle stations in its areas. They are now encouraging and motivating people to use this eco-friendly mode of transport for last-mile connectivity. South Delhi Municipal Corporation (SDMC) has launched a project to install 82 hi-tech cycle stations in its areas. Of these, 40 will be established by March 31, said officials. The hi-tech cycle stands will be completely powered by solar energy. "Lighting and other facilities will operate with the help of solar panels," said an official. These e-cycles will have state-of-the-art facilities like GPS, integrated lock, RFID tag and a real-time monitoring system. Now people can use and book these e-cycles easily. All they need to do is to download SDMC app and submit the details, pay minimum security fee (returnable after use) and minimum fees per hour to use the cycles. Once the payment is made and details are submitted, people can easily unlock them using QR code. It can be of maximum use for a day. These stations are being established mostly near solar e-charging stations or markets.

On the other hand New Delhi Municipal Corporation (NDMC) is also setting up over 100 e-charging stations in its area. NDMC has already established more than 60 e-charging stations in its area and is augmenting by more than 100 in this year itself. They have also launched a common payment portal for all its services and smart bus queue shelters in its budget for 2022-23. They have also aimed for an ambitious plan of shifting to a 100 per cent renewable energy municipal body of the country. Interestingly NDMC has also not renewed its power purchase agreement with thermal power generating stations after its expiry. The civic body has also announced that it is taking up fresh purchase agreements with only renewable power providers, including hydel and solar energy.

BMC plans to construct Safe School Zones to make roads and footpaths in Mumbai children-friendly

School going children constitutes more than 20 per cent of Indian population. Each day they have to walk through the congested roads of the city to reach their school or home. As per various report, India loses 31 children every day owing to road traffic crashes. Basically children are among the most vulnerable road users because they are more prone to risks compared to adults given their smaller size, cognitive development and perception of risk. Therefore, apart from providing access to quality education, it is imperative to enable safer access to schools.

Recognising the problem different cities across the world are creating safe walking zones for children to walk home. In India, similar

kind of model was introduced in Mumbai in October 2021. A trial run was conducted at Mirza Galib Road in Byculla. This road is home to two schools. Between 2017-'19, the 500-meter stretch of the road around Christ Church School recorded 23 crashes and three fatalities. To overcome this problem, the Brihanmumbai Municipal Corporation (BMC) in partnership with Mumbai Traffic Police (MTP) and World Resources Institute (WRI) launched a plan to create a Safe School Zone in the city, to make roads and footpaths outside schools safe for children.

This Safe School Zone trial project includes the demarcation of the school zone using signages, road markings, providing designated areas for walking and waiting, multi-utility zones including pick-up and drop-off zones, children-friendly spaces with playful elements and a vibrant pedestrian crossing. The pilot project is initially using low-cost material and planned to take feedback from the neighborhood, before making it permanent on-ground. The successful implementation of this pilot project will help BMC to create children-friendly and walkable school zones in other parts of Mumbai.

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ABOUT CUS

In 1966, Centre for Training and Research in Municipal Administration (CTRMA) was established in IIPA with the support of Ministry of Health and Family Planning, Government of India, the then nodal ministry on urban local bodies. The Centre was created with specific objectives to operate as a knowledge centre and think tank on urban sector issues and an apex institution at national level. CTRMA was rechristened as CUS (Centre for Urban Studies) in 1974-75.

Director General, IIPA is the Director of CUS and chairperson of the Steering Committee. A faculty of CUS is nominated as Coordinator CUS, who becomes the Member-Secretary of the Steering committee. CUS has an interdisciplinary team of faculty members from Economics, Public Administration, Urban Planning and Civil Engineering background. In addition other faculty members of IIPA drawn from environment, disaster management, social development and e-governance background provide their professional input to CUS on case to case basis.

Objectives of CUS

The precise objectives of CUS are :

- (i) Organize suitable training courses for municipal and state officials concerned with Municipal Administration in order to improve the technical and professional character of municipal services;
- (ii) Hold seminars for the elected leaders of urban local authorities for the purpose of facilitating awareness of problems facing the local bodies and encouraging communication between the technical experts and the popular leaders;
- (iii) Arrange special conferences and study groups on contemporary problems of municipal administration,
- (iv) Help other States and regional training and research centres on municipal administration that might be established;
- (v) Promote research on various governmental problems of urban and metropolitan growth in India;
- (vi) Develop an efficient and up-to-date information centres and documentation services in municipal administration in India and abroad; and

- (vii) Provide suitable consultancy service to the various public bodies on municipal administration and to represent India in international conferences.

Outreach

In accordance with its objectives, the Centre during the last 55 years has carried out research, training and advisory services. The Centre has developed and strengthened its national and international outreach and coverage of stakeholders. CUS extends India's urban agenda to (a) Institutions and agencies of Government of India, (b) state government agencies, (c) ULBs (Urban Local Bodies) and para-municipal agencies dealing with specific services, programmes and schemes of Government of India and respective state governments.

Research

Recent Research activities include policy research to Government of India and states and major ULB's, Action research for functionaries at cutting edge level and evaluation of specific scheme and programmes. Research is also used to develop contents for capacity building programmes and disseminate information through a range of publications. CUS also carries out documentation of best practices on specific urban innovations.

Digital Training Initiatives

Since July 2020, CUS started first of its kind digital training programmes in the country to build capacities of middle and senior level urban functionaries through online training. These programmes also tend to seek lessons from Mission Karmayogi launched by the NDA government in September, 2020. Modules developed by CUS include.

- (i) Urban Governance and Administration
- (ii) Urban Finance and Revenue
- (iii) National Urban Livelihood Mission
- (iv) Integrated Urban Water Management System
- (v) Participatory Governance for Urban Management

The above programmes have a duration of 3 to 5 days and cover senior officers from urban local bodies and para-statal/para-municipal agencies dealing with various aspects of urban development.

(Refer CUS at <https://www.iipa.org.in/cms/public/page/centre-for-urban-studies> for its activities details)

NOTES FOR CONTRIBUTORS

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Manuscript

- Manuscript should be in MS Word format. This should include the name, email ID and the institutional affiliation of the author(s).
- Manuscripts in English should use British spelling and typographical conventions.
- The maximum word limits 6000 words only (all inclusive).

Articles

- There should be no line spaces between paragraphs.
- Notes should be listed at the end of the main text.
- Manuscripts should be typed in Times New Roman, font size 12, each page numbered.

Punctuation and abbreviations

- Single quotation marks should be used to enclose actual quotes from other sources or for technical terms when they are first introduced. On subsequent mention of technical terms, no quotation marks should be used. Excessive use of quotation marks should be avoided.
- Double quotation marks are used to enclose quotes within text which is itself quoted.
- Latin abbreviations such as 'i.e.' or 'e.g.' are acceptable only in expressions within parentheses, as here: 'adjectives which collocate with fare (e.g. wholesome, simple, country) ...' Elsewhere, they should be replaced by their English equivalents, 'that is' or 'for example'. Italic should not be used for such abbreviations or for such common Latin expressions as 'ad hoc', et al., etc.
- Numbers up to 9 and vaguely expressed numbers should be spelled out in words. However, any numbers in a statistical context, precise numbers, units of measurement, and numbers above 100 should be stated in figures.

Table and Figures

- Every table should be given a number and brief title or caption set above the body of the table and source at the bottom.
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- Avoid such expressions as 'In the following table ...', 'As can be seen in the figure above ...' In the printed version these elements may need to be repositioned due to constraints of page layout, always after the first mention of the Table or Figure number in the text.
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- Page references should be provided when reference is made to a specific passage in a book or article. These appear after the date of publication and are preceded by a colon and a single space: Jefferson (1996: 296 – 299) or Cowie (1999: 79).
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