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Status of Urbanization and Industrialization

in Middle Ganga Basin

GRBMP: Ganga River Basin Management Plan

by

Indian Institutes of Technology


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Preface

In exercise of the powers conferred by sub-sections (1) and (3) of Section 3 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government has constituted National Ganga River Basin Authority (NGRBA) as a planning, financing, monitoring and coordinating authority for strengthening the collective efforts of the Central and State Government for effective abatement of pollution and conservation of the river Ganga. One of the important functions of the NGRBA is to prepare and implement a Ganga River Basin Management Plan (GRBMP).

A Consortium of 7 Indian Institute of Technology (IIT) has been given the responsibility of preparing Ganga River Basin Management Plan (GRBMP) by the Ministry of Environment and Forests (MoEF), GOI, New Delhi. Memorandum of Agreement (MoA) has been signed between 7 IITs (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and MoEF for this purpose on July 6, 2010.

This report is one of the many reports prepared by IITs to describe the strategy, information, methodology, analysis and suggestions and recommendations in developing Ganga River Basin Management Plan (GRBMP). The overall Framework for documentation of GRBMP and Indexing of Reports is presented on the inside cover page.

There are two aspects to the development of GRBMP. Dedicated people spent hours discussing concerns, issues and potential solutions to problems. This dedication leads to the preparation of reports that hope to articulate the outcome of the dialogue in a way that is useful. Many people contributed to the preparation of this report directly or indirectly. This report is therefore truly a collective effort that reflects the cooperation of many, particularly those who are members of the IIT Team. A list of persons who have contributed directly and names of those who have taken lead in preparing this report is given on the reverse side.

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Contents

1. Introduction

This report presents the trends in urbanization and industrialization in the Ganga River basin and analyzes their implications for the GRBMP, as most of the cities, towns and industrial units in the basin are located at the bank of Ganga, its offshoot canals and its tributaries. These urban centres and industrial units not only draw water from rivers for their various needs but also release untreated sewage and industrial effluents into them, adversely affecting both quantity as well as quality of water flow in the rivers. It may be further pointed out that even the sewage of cities and waste water of industrial units, located far away from the river bank, also directly or indirectly goes to the river through drainage system and heavily pollutes them. The accelerated pace of growth of urbanization and industrialization, especially during the last two decades of economic reforms in India, has put enormous pressure on the carrying capacity of the river system.

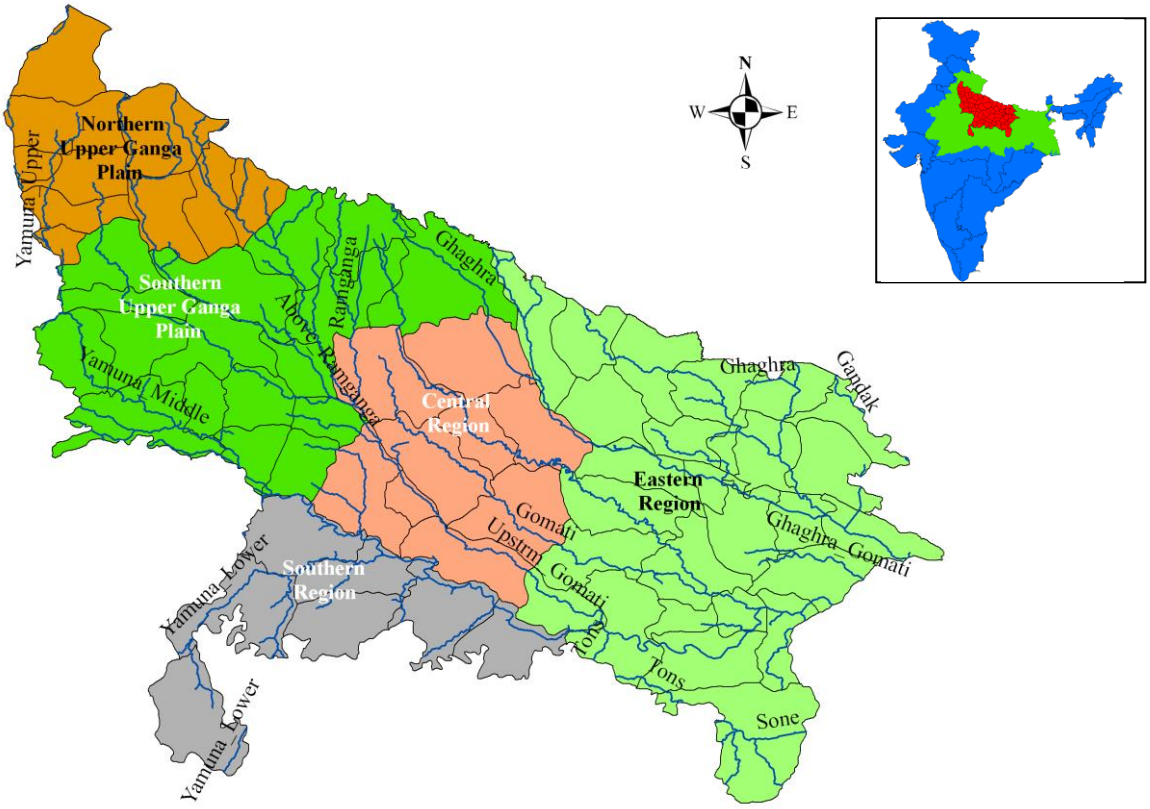
Since, urbanization, industrialization and the water pollution are inter-related issues; they are required to be addressed in an integrated manner. There are several anthropogenic and socio-economic factors associated with the growth of urbanization and industrialization that affect the quantity and quality of water resources. For example, growth and composition of GDP, household consumption expenditure, pattern of industrialization, and production and consumption practices, occupational structure, rural-urban migration, and other socio-demographic outcomes are some of the important indicators of water demand as well as its degradation. Therefore, in order to prepare a holistic GRBMP, it is important to understand the trends and pattern of urbanization and industrialization along with the associated factors. Keeping these aspects in view, this report concentrates on the pattern of urbanization and industrialization in the Ganga basin area and its implications for the river basin management. For the study purpose, the entire Basin is divided into three stretches, namely Upper Ganga Basin (Uttarakhand), Middle Ganga Basin (Uttar Pradesh) and Lower Ganga Basin (Bihar and West Bengal). This report exclusively focuses on the Middle Gang Basis comprising the Uttar Pradesh stretch.

2. Methodology

The present report is based on the secondary data drawn from various published sources, which includes Uttar Pradesh Govt. website (http://www.up.gov.in), Statistical Diaries, and Abstracts published by the State Planning Institute Lucknow, Uttar Pradesh, NSSO reports, and Annual Survey of Industries (ASI). Census of India has also been the important source for the population related data. For some indicators of urbanization and industrialization, data from Department of the Economics and Statistics, Ministry of Statistics and Programme Implementation (MOSPI) have been taken.

In this report, analysis of data is done at three levels—districts, regions and State. For analyzing various indicators, time series district-wise data have been used. The report accounts only for the 71 districts of Uttar Pradesh, as the statistics for the five newly formed

additional districts were rare to obtain. However, these 71 districts encompass the entire state including even the newly carved out five districts. In order to make the report more relevant, concise and brief, all the 71 districts have been divided into five regions and then detailed region-wise analysis has been carried out in order to draw meaningful inferences from the planning point of view. These five regions are: Northern Upper Ganga Plains (10 districts), Southern Upper Ganga Plains (18 districts), Central Region (9 districts), Southern Region (7 districts of Bundelkhand region), and the Eastern Region (27 districts). Map-1 depicts the location of Uttar Pradesh in the Ganga Basin, and all five regions discussed above.



Map 1: Location of Uttar Pradesh (with regions) in the Ganga Basin and in India

3. A Brief Profile of the Middle Ganga Basin (Uttar Pradesh)

Having a population of around 200 million people (as per 2011 Census), the Middle Ganga Basin comprising whole State of Uttar Pradesh, is one of the most populous regionsof India. Uttar Pradesh, with an area of 236,286 sq. kms, covers a large part of the highly fertile and densely populated upper and middle Gangatic plains. It shares an international border with Nepal to the north along with the Indian state of Uttarakhand, Himachal Pradesh to the north-west, Haryana, Delhi and Rajasthan on the west, Madhya Pradesh on the south, Chhattisgarh and Jharkhand on the south east and Bihar on the east. Uttar Pradesh has more than 31 rivers. Among them, holy Ganga, Yamuna, Sarayu and Ghaghara are of very much religious importance. According to Census 2011, there are 7 cities in the State having population more than 1 million, while the number of cities having population more than 5

lakhs stand at 16. Total number of cities and towns has increased from 704 in 2001 to 915 in 2011. Total urban population has increased from 34.54 million in 2001 to 44.47 million in 2011, which corresponds to compounded growth rate of 2.56 percent per annum. However, in terms of urbanization the State's rank (excluding UTs) has gone down from 18 in 2001to 23 in 2011. This implies that the pace of urbanization in Uttar Pradesh has been relatively far slower than some of the other states such as Tamil Nadu, Maharashtra, Gujarat, etc.

4. Urbanization: Growth and Dimension

4.1 Urbanization in Uttar Pradesh

Trend in urbanization in the State has been compared with that of all-India. Figure-1 shows that the percentage of urbanization in Uttar Pradesh has been much lower than the national average. At the all-India level, rate of urbanization (% of urban population to the total population) has increased from 20 in 1971 to 28 in 2001 and further to 31 in 2011, whereas the corresponding rate of urbanization in Uttar Pradesh has increased from 14 in 1971 to 21 in 2001 and further to 22 in 2011. A perusal of Figure 1 reveals that the rate of urbanization of India as a whole has been much higher than that of Uttar Pradesh.

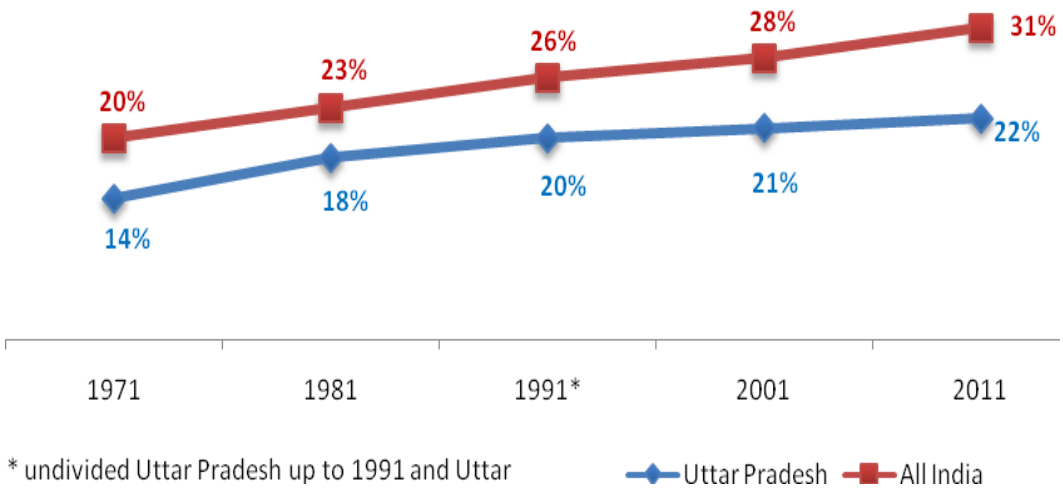
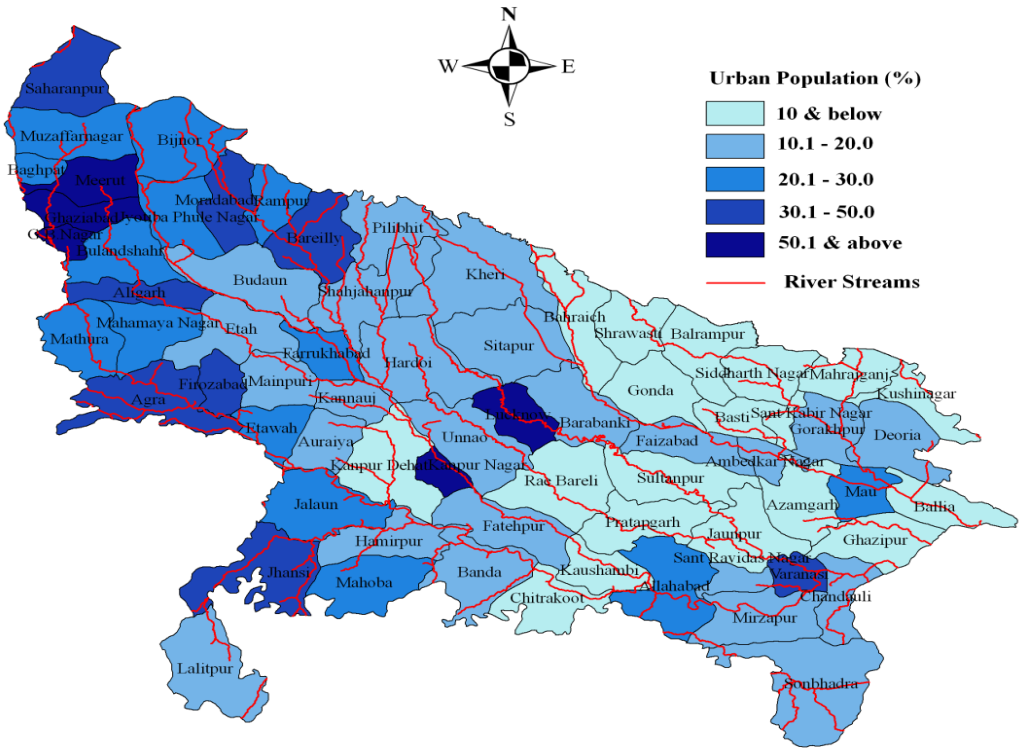


Figure 1: Level of Urbanisation (%), All India and Uttar Pradesh

As per the Census 2011,Tamil Nadu has 48.45 percent of its population as urban, followed by Kerala (47.72%), Maharashtra (45.23%), Gujarat (42.58%), Karnataka (38.57%) and Punjab (37.49%). Major states, where level of urbanization is below the national average comprise Madhya Pradesh, Rajasthan, Jharkhand, Chhattisgarh, Uttar Pradesh, Uttarakhand, Orissa, Assam and Bihar. Bihar has only 11.3 percent of total population in urban areas, ensued by Assam (14.08%), and Orissa (16.68%). Since, urbanization is one of the indicators

of development; the low rate of urbanization in Uttar Pradesh suggests that the State is far behind other states in terms of economic development.

The State of Uttar Pradesh not only has low level of urbanization, but is also characterized by wide variation in the level of urbanization across districts and regions. Map2 shows the district-wise level of urbanization in the State. As could be discerned from Map 2, there are two distinct groups: towards the east of Lucknow, there is a lighter shade compared to its west implying a better urban concentration in the west as compared to the east. Looking at the urban geographical concentration, we find that five districts viz., Lucknow, Kanpur Nagar, Meerut, Ghaziabad and Gautam Budha Nagar conspicuously appear on the map with more than half of their population as urbanized. There are eight districts with urban population ranging between 30.1 to 50 percent, out of which three are located in the Northern Upper Ganga Plain region (Saharanpur, Moradabad and Bareilly), three in the Southern Upper Ganga Plain region (Agra, Firozabad and Aligarh), one each in the Southern region (Jhansi) and the Eastern region (Varanasi). Fifteen districts had urban population in the range of 20.1 to 30 percent, 24 districts had in the range of 10.1 to 20 percent, and 19 districts had 10 or less than 10 percent urban population.



Map 2: Level of Urbanisation (%) across Districts of Uttar Pradesh, 2011

Relatively higher level of urbanization in the districts like Meerut, Ghaziabad, Gautam Budh Nagar, Aligarh, Agra, Kanpur, Allahabad, and Varanasi have greater implications for the quality and quantity of water flows in the River Ganga and its tributaries, as almost all of them are located at the banks of Ganga or its major tributary i.e., Yamuna.

4.2 Trends and Pace of Urbanization in Uttar Pradesh

Figure-2 demonstrates the category-wise increase in the number of towns in Uttar Pradesh and India between 2001 and 2011. Towns are classified into two categories—statutory towns and census towns. In Uttar Pradesh, number of statutory towns has increased from 638 in 2001 to 648 in 2011, while during the same period the number of census towns has increased 4 fold from 66 to 267. At all India level, number of census towns has increased from 1362 to 3894 during the last one decade, registering a less than 3 fold increase. This implies that the growth of census towns in Uttar Pradesh has been much higher than that across the country. However, at the aggregate level, percentage increase in the number of total towns has been higher in India (53.70%) than in Uttar Pradesh (30.0%).

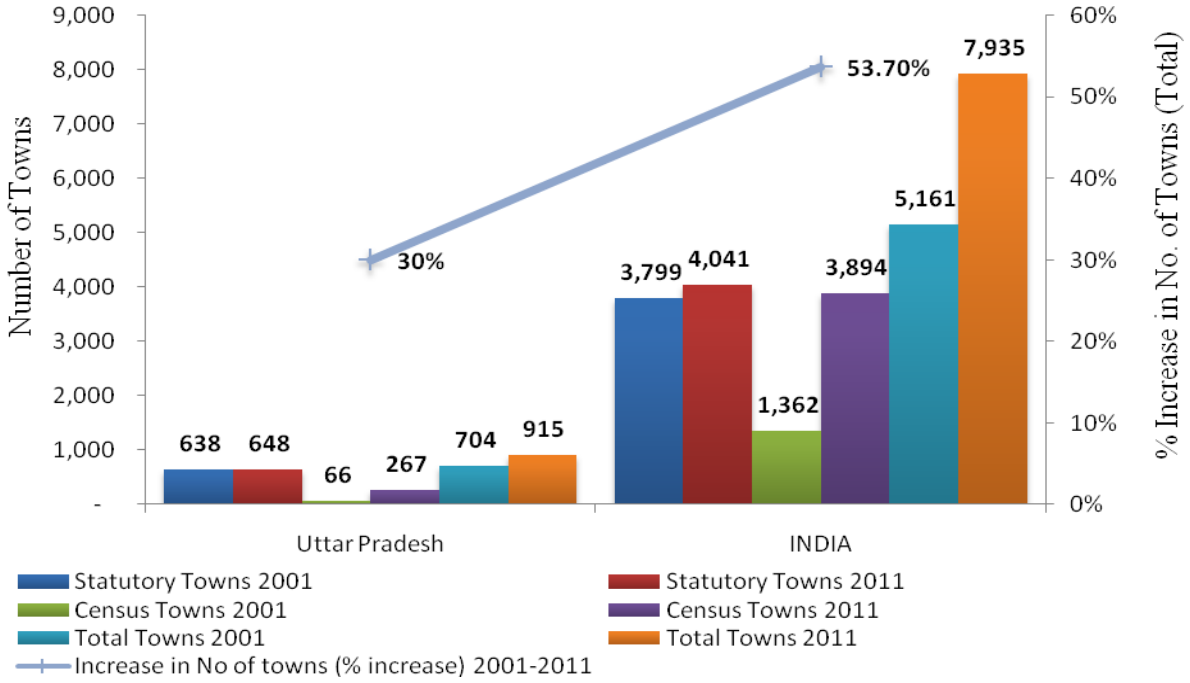


Figure 2: Increase in Number of Towns from 2001 to 2011, Uttar Pradesh and India.

Trends in urbanization in the state, as shown in Figure-3, suggests that the number of towns in the state has increased from 349 in 1901 to 410 in 1951, to 670 in 2001 and further to 915 in 2011. As far as trend in urban population is concerned, it is observed that it has increased from 123.89 lakhs in 1970-71 to 324.4 lakhs in 2001 and further to 444.70 lakhs in 2011. Trends in decadal growth rates in the urban population show that these rates vary significantly across decades. Since 1921, the urban population grew steadily till 1941 and thereafter, the urban population increased at a decreasing rate till 1961. After 1961, there has been significant growth in the pace of urbanization in the state. The decadal growth in urbanization was observed highest in the decade of 1971-81. During the last three censuses (1991, 2001, 2011), growth rates of urbanization are estimated to be 30.53%, 32.99% and 28.75% respectively. The information given in the Figure 3 clearly reveals that the decadal

growth rates in the urban population have been much higher than the growth rates in the rural population. There seems to be two factors explaining this growth - first is the increase in number of towns and the second is migration of rural population to the urban area. Over a period of time, some big villages have transformed into small towns. Moreover, the expansion of cities and towns also encircled the villages in their jurisdiction and thus, raised the urban population. The issues related to rural to urban migration has been discussed in a separate section.

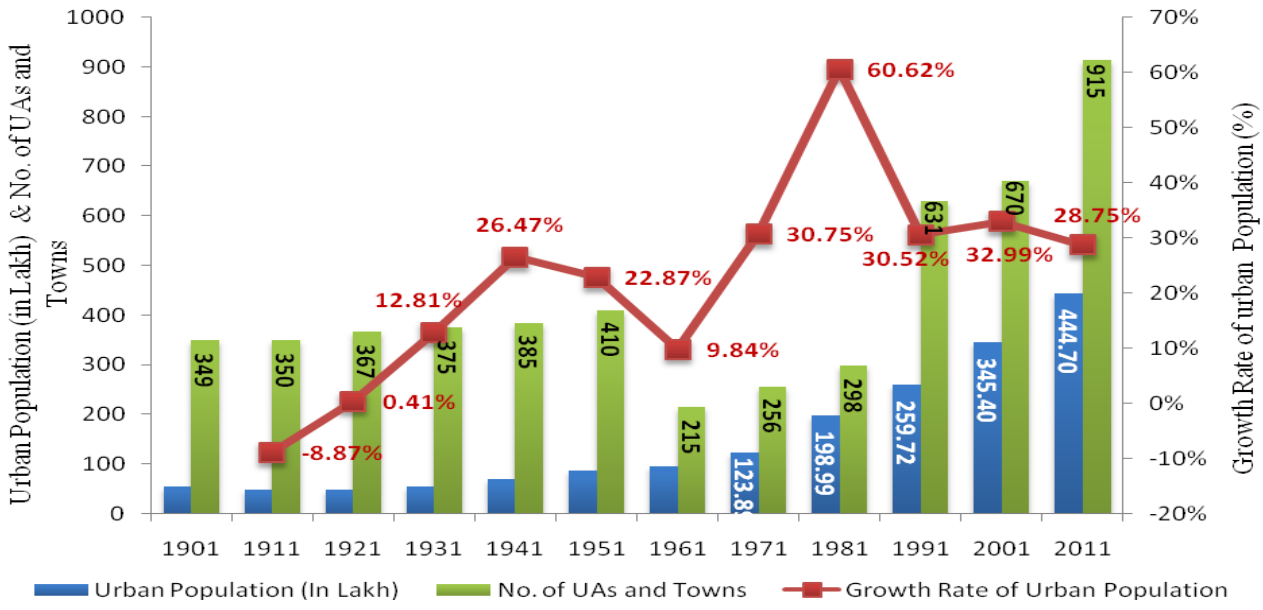


Figure 3: Urban Population (in Lakh) and Growth Rate, Number of UAs and Towns in Uttar Pradesh (1901-2011)

4.3 Regional Pattern of Urbanization

For the purpose of studying the trends and pattern of urbanization and its implications for the GRBEMP, the entire state is divided into 5 regions, as defined earlier. Since urbanization and industrialization are inter-related, a high level of urbanization in any region may also have a high concentration of industries and services, thereby leading to a high level of pollution content, including sewage and industrial wastewater released into the rivers. Figure 4 shows the regional trends in urbanization in the State. It is noteworthy that Northern Upper Ganga Plain (NUGP) has the highest percentage of urbanization in the state. It is followed by the Southern Upper Ganga Plain (SUGP) and the Central region (CR). The rate of urbanization in the Eastern Region (ER) is lowest among all the regions. It may also be relevant to note that the Upper Ganga Plains (northern plus southern) have more or less the same area and total population as the ER of the state has, however, the level of urbanization in the ER is about one-third that of the NUGP which implies that the policy

focus of pollution reduction in the Ganga river must be more on the Upper Ganga Plains and the Central Region.

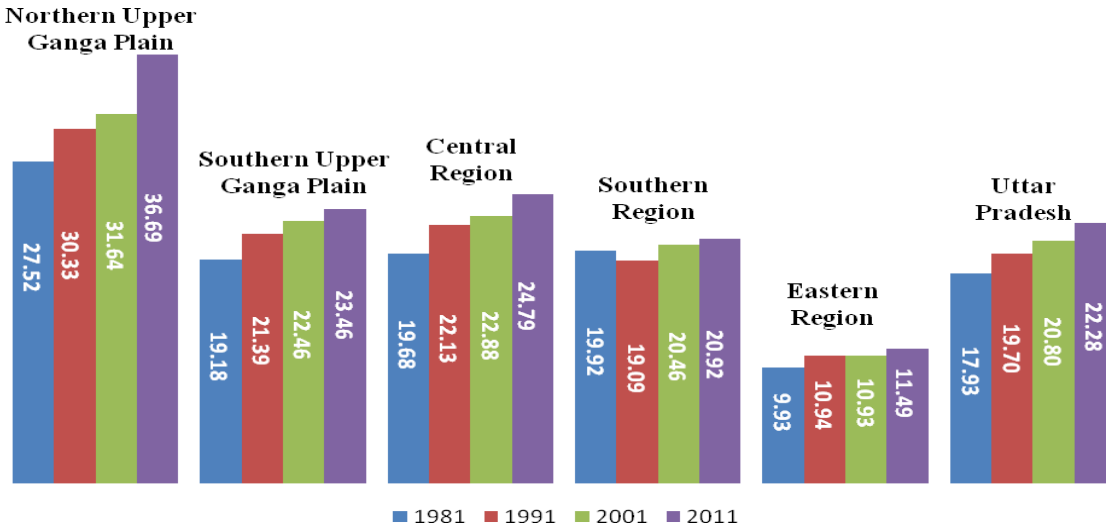


Figure 4: Urban Population (%) across Regions of Uttar Pradesh

As far as the regional trends in urbanization are concerned, as shown in Figure 4 in NUGP it has increased from 27.52% in 1981 to 36.69% in 2011, while the corresponding increase in the ER has merely been from 9.93% to 11.49%. At the State level, urbanization has increased from 17.93% in 1981 to 22.28% in 2011. It is also observed that the level of urbanization in the three regions, namely, NUGP, SUGP and CR was much higher than the State average.

Figure 5 displays the regional distribution of total population with rural-urban break-up in 2011. It is significant to note that although the NUGP constituted 15.7 percent of total population of the State, its share in the State's total urban population is 26.9 percent, while it shares only 12.5 percent of total rural population. Contrary to this, ER with 40 percent of total population of the State constitutes only 21.9 percent of total urban population. Three regions, namely, NUGP, SUGP and CR together constitute 55.2 percent of total population of the State, while they share 73.2 percent of total urban population of the State. This clearly indicates that Upper Ganga Plains and CR are more urbanized as compared to the other regions of the State. This fact is also evident from the region-wise percentage of urban population in 2011, as shown in Figure 5.

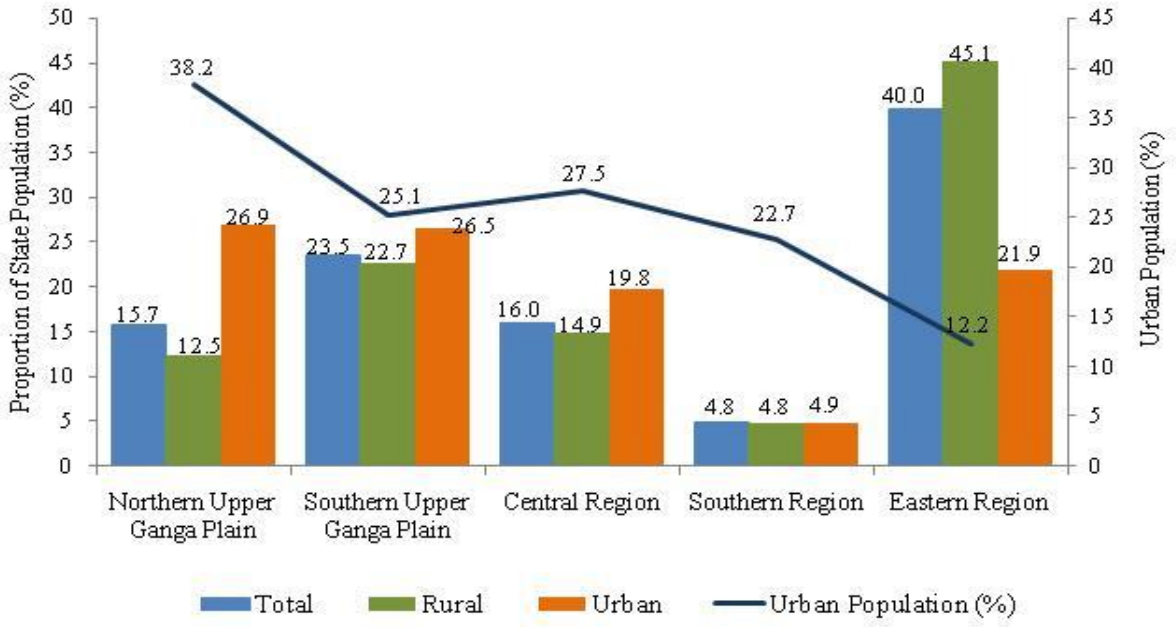


Figure 5: Proportion of State Population (%) and level of Urbanization across Regions of Uttar Pradesh, 2011

4.4 Growth Trends in Metro Cities

Figure 6 presents trends in population of seven Metropolitan Urban Agglomerations and Cities of the State since 1951. It is obvious from the Figure that there has been exponential growth in the population of these major cities. The highest increase is observed in Ghaziabad city, especially after 1991 as its population went up from 5.12 lakhs in 1991to 23.59 lakhs in 2011, registering a 4.6 fold rise. Similarly, population of Lucknow city went up from 16.69 lakhs in 1991 to 29.01 lakhs in 2011 (1.74 times increase). Population of Kanpur City, which is the largest city of the State, grew relatively at a slower pace during the last three decades as its population increased from 20.30 lakhs to 29.20 lakhs during the same period. At present, the population of capital city Lucknow is closer to that of Kanpur City. Population of Agra City increased from 9.48 lakhs in 1991 to 17.46 lakhs in 2011 (1.84 times increase). A perusal of Figure 6 reveals that during the last three decades, Ghaziabad recorded the highest increase, which is followed by Agra, Lucknow, and Meerut. Varanasi recorded the lowest increase, closely followed by Kanpur and Allahabad.

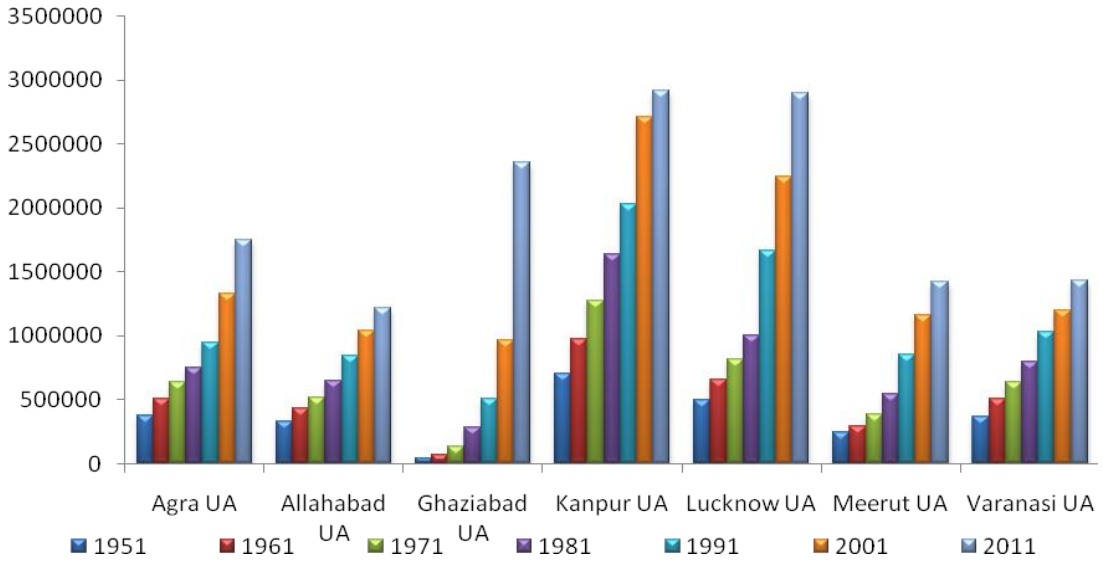


Figure 6: Population Trends in Metropolitan Urban Agglomerations and Cities in U. P. (1951-2011)

Figure-7 shows the decadal growth in population of these cities. As is evident from the Figure, Ghaziabad achieved the highest decadal growth during all the period. During 2001-11, its population growth was 143.58 percent while all the remaining cities are far behind. Next to Ghaziabad is Agra which recorded 31.18 percent growth during 2001-11. Agra is followed by Lucknow (29.21%) and Meerut (22.66%). Kanpur recorded the lowest growth (7.53%), distantly followed by Allahabad (16.74%). From the analysis of Figure 6 and 7, we can conclude that the cities located in the Upper Ganga Plains grew faster than the cities of other regions.

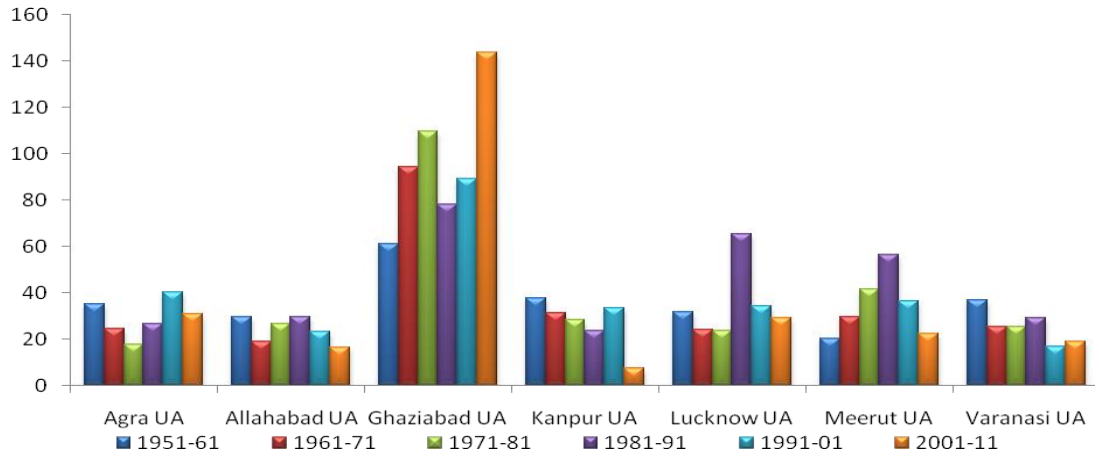


Figure 7: Decadal Variations in population of Metropolitan Urban Agglomerations and Cities in U.P.

4.5 Category-wise Growth of Cities and Towns

For this analysis, as shown in Figure 8 cities and towns are classified into six categories. It is noted that there has been significant growth in the Class-I cities in the State. The growth was highest in 1971 (57.66%) and lowest in 1901. Since 1931, there has been steady rise in the population growth of Class-I cities. The population growth rates in other categories of towns were also positive, but they show rise and falls across census years. In case of Class-II towns, the growth rate is found lowest in 1951 (9.04%) and highest (15.34%) in 1921. For Class-III towns, the growth rate ranged between 10.68% in 1921 and 16.87% in 1971. It is evident from the Figure 8 that since 1921, the population growth rates in Class-VI towns show a continuous decline. Thus, the population of Class-I cities has grown much faster than that in the other categories of towns.[1]

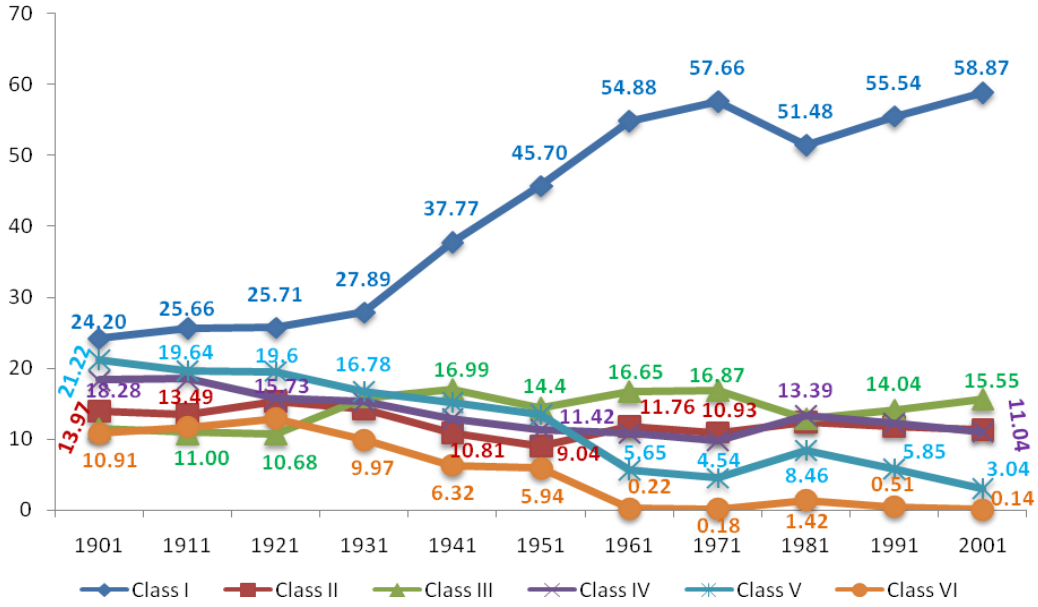


Figure 8: Class-wise Growth of Urban Population (%) in Uttar Pradesh

Regional pattern of growth of towns in the State is exhibited in Figure 9. The Figure is based on the 1991 and 2001 censuses. It is significant to note that during 1991-2001, number of towns in all the regions has increased. The number of towns in NUGP, SUGP, CR, SR (Bundelkhand) and ER during 1991-2001 has increased by 6, 12, 3, 6 and 23, respectively. During 2001, the highest number of towns is found in SUGP, followed by ER and NUGP. The Upper Ganga Plains, which constitute 39.2% of total population and 53.4% of total urban population of the State, have the largest number of towns (344 towns) in the State.

[1] The Census 2011 classification of urban settlements comprises metropolitan, or million plus cities;Class-I towns with population ranging from 1 lakh to 10 lakhs; Class-II towns with population ranging from 50,000 to 1 lakh;Class-III towns having population in the range of 20,000 to50,000; Class-IV towns from 10,000 to 20,000; Class-V towns with population from 5,000 to 10,000; and Class-VI towns from 3,000 to 5,000.

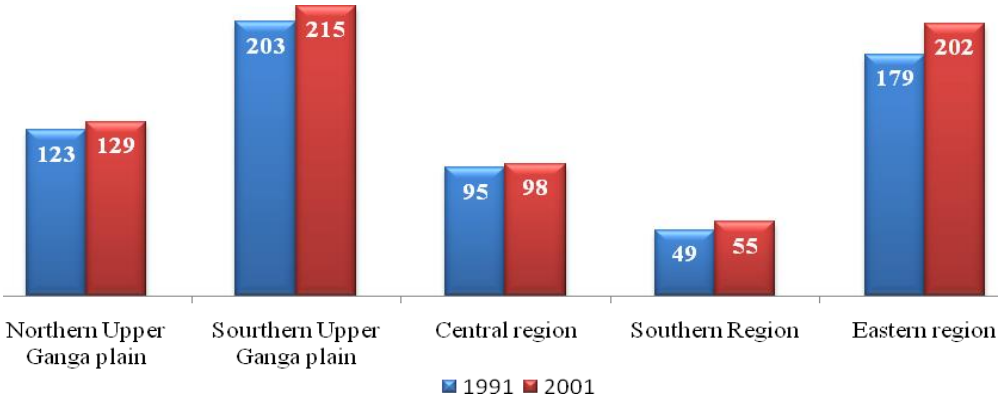


Figure 9: Number of towns across different Regions of Uttar Pradesh

As far as class-wise distribution of towns in different region is concerned, it is observed that in the NUGP, the maximum number of towns isconcentrated in the category of Class IV (10-20,000 range) but declined during 1991 to 2001. Further, Figure 10 shows that the number of towns under the first three categories (Class I, II and III) has increased in 2001 over 1991 and the subsequent Census has recorded a decline in their numbers.

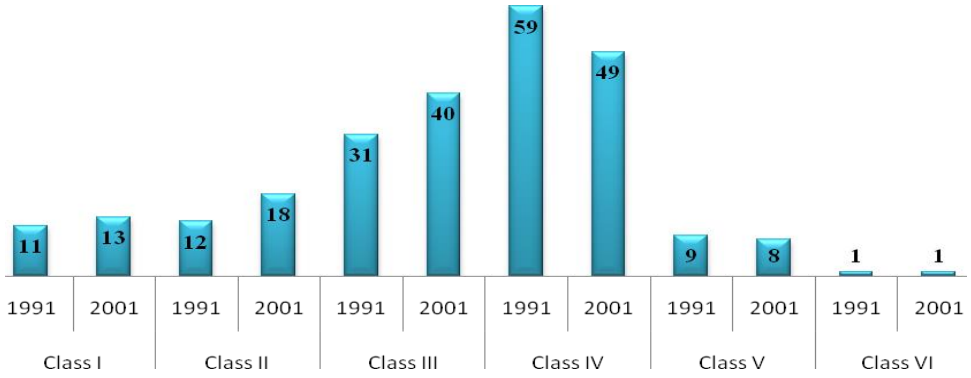


Figure 10: Class-wise number of towns in Northern Upper Ganga Plain

In SUGP, increase in number of towns in 2001 over 1991 is higher than that in the NUGP, as is exhibited by Figure 11. However, pattern of distribution of towns across categories is similar. The number of towns shows an increase up to Class-IV and thereafter it shows a decrease. Further, the number of towns in both the periods is largest under Class-IV (10-20,000), closely followed by Class-III (20-50,000).

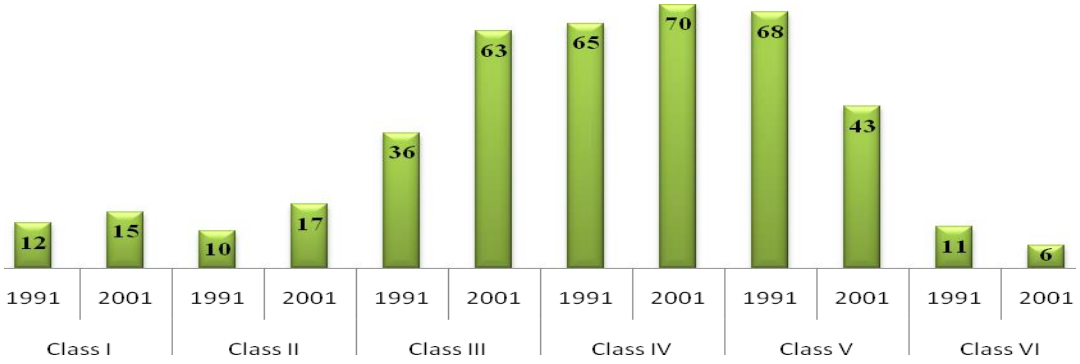


Figure 11: Class-wise number of towns in Southern Upper Ganga Plain

In the CR, distribution of towns across categories is quite different from that in the Upper Ganga plains. In this region, number of Class-V towns smaller towns with population in the range of 5-10,000) is observed highest among all the categories, followed by Class-IV and Class-III towns. If we compare the number of towns in 1991 to that in 2001, we find that the number of towns under Class I, III, and IV has increased in 2001 over 1991, while in all the remaining categories, it has declined in 2001 over 1991 (Figure 12).

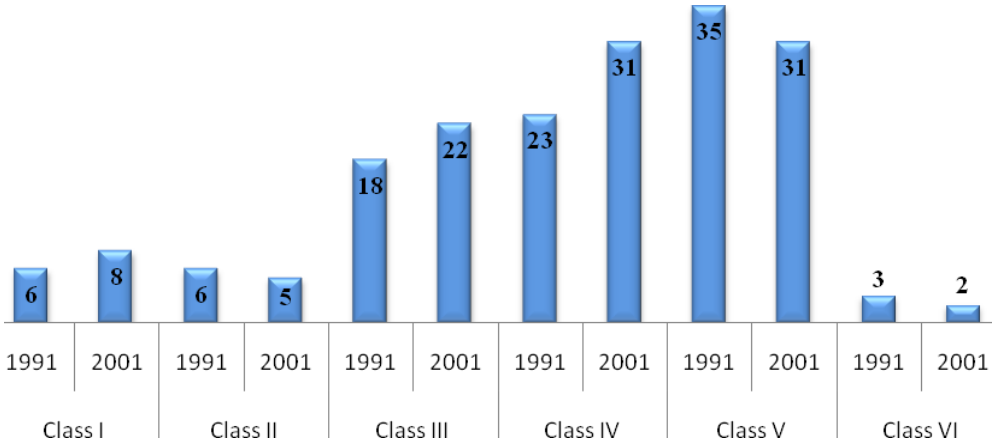


Figure 12: Class-wise number of towns in Central Ganga Region

Figure 13 shows that the number of towns in the SR increases with the increase in class category up to the Class-IV and thereafter it declines in both the census years. The highest concentration of towns in both the years is under Class-IV, followed by Class-V and Class-III. More or less similar pattern is also observed in the ER where largest concentration is of smaller towns under Class IV, followed by Class-V and Class-III (Figure 14).

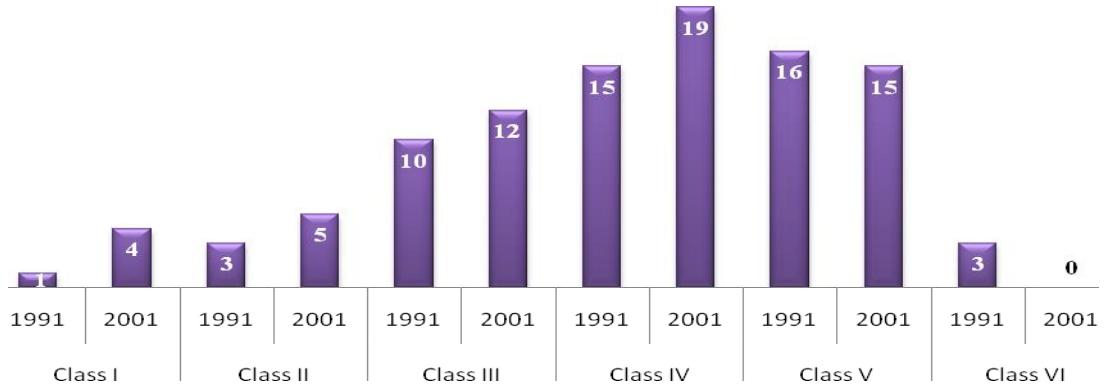


Figure 13: Class-wise number of towns in Southern Ganga Region

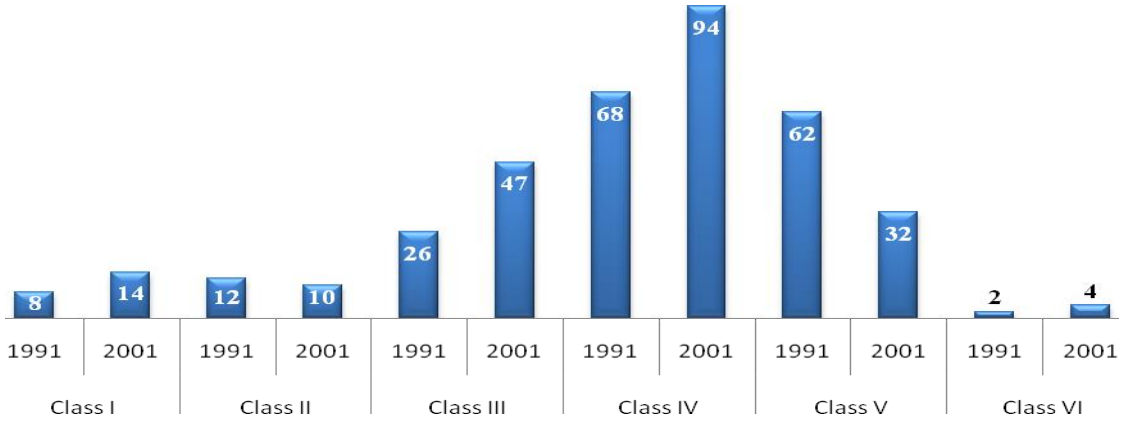


Figure 14: Class-wise number of towns in Eastern Ganga Region

On the basis of above analysis, it can be concluded that although the highest concentration of number of towns in the State corresponds to smaller towns under Class-IV, the number of class I and class II towns has also increased in 2001 census over 1991 census. Further, the growth of Class-I and Class-II i.e., larger towns is relatively higher in Upper Ganga Plains than the other regions.

5. Urban Amenities

5.1. Sources of Drinking Water

During the last 10 years (2001-2011), the number of total households in the State has increased from 257.61 lakhs 2001 to 329.24 lakhs in 2011 -corresponding to 2.79 percent per annum, while the corresponding number in the urban areas has increased from 51.71 lakhs in 2001 to 74.49 lakhs in 2011 -i.e., 4.41 percent per annum. Thus, number of urban households grew much faster than the total number of households. Region-wise number of total and urban households shown in the Table 1 reveals that the shares of CR and NUGP in the total households of the State have increased in 2011 over 2001 while for all other

regions, it has declined. In case of urban areas, the highest increase in the percentage share of households is observed in the NUGP, followed by SUGP. It is significant to note that although, the ER shares 37.51 percent of total households of the State, its percentage share in the urban households is only 19.70. Contrary to this, the NUGP constitutes only 16.13 percent of total households of the State, its share in the total urban households is much higher at 28.46 percent in 2011. Similarly, the CR comprises only 10.87 percent of total households, while its share in the urban households is 20.62 percent. The Table 1 also reveals that the percentage share of NUGP in the total urban households of the State has significantly increased in 2011 over the 2001 figure, while in case of all other regions, the percentage share has decelerated. It can be concluded that urbanization has increased faster in NUGP than the other regions of the State.

Table 1: Region-wise Trends in Number of Total and Urban Households in Uttar Pradesh

	Census	NUGP	SUGP	CR	SR	ER	STATE
Total households in Lakh	2001	39.05	74.12	28.00	17.03	99.40	257.61
		(15.16)	(28.77)	(10.87)	(6.61)	(38.59)	(100)
	2011	53.12	78.38	56.98	17.27	123.49	329.24
		(16.13)	(23.81)	(17.31)	(5.24)	(37.51	(100)
Urban Households in Lakh	2001	12.93	13.62	11.20	2.88	11.08	51.71
		(25.01)	(26.34)	(21.65)	(5.57)	(21.43)	(100)
	2011	21.20	19.43	15.36	3.83	14.68	74.49
		(28.46)	(26.09)	(20.62)	(5.14)	(19.70)	(100)
Rural Households In Lakh	2001	26.12	46.75	33.90	10.85	88.28	205.90
		(12.68)	(22.71)	(16.47)	(5.27)	(42.87)	(100)
	2011	31.92	58.95	41.63	13.44	108.81	254.75
		(12.53)	(23.14)	(23.33)	(5.27)	(42.71)	(100)

Note: Figures in parentheses are percentages to the total

Table 2 shows the region-wise trends in the percentage distribution of urban households by the sources of drinking water. In 2001, 54.92% of total households had access to the drinking water through tap and 40.99% through hand pumps. Only 1.63% had access to water from tube-well/borehole and 1.94% from wells. In 2011, households getting water from tap and hand pumps has declined to 52.0% and 36.75%, respectively, whereas urban households having drinking water through tube-well/borehole has increased to 9.59%. The share of well water has also declined in 2011.

Regional pattern of distribution of urban households by sources of drinking water indicates that in the case of tap waterin 2011, the highest percentage share is observed in CR, followed by SR. Further, the percentage share of tap water has increased in the CR and the SR, while in all other regions it has declined. However, tap continues to remain the key source of water supply to the urban household in all the regions. Next to tap water is the

hand pump which occupies the second place in terms of sources of drinking water. Its percentage share in the sources of drinking water has declined in the Upper Ganga Plains and increased in all other regions. There has been significant increase in the percentage share of households having tube-well/borehole as a source of drinking water. The share of well water has declined in 2011 in all the regions. All other sources of water have negligible share in all the regions.

Table 2: Region-wise Trends in the Percentage Distribution of Urban Households by Sources Drinking Water in Uttar Pradesh, 2001-2011

Sources	Census	NUGP	SUGP	CR	SR	ER	STATE
Tap	2001	54.75	51.02	56.40	51.52	59.32	54.92
	2011	54.56	46.43	74.11	65.17	54.33	52.00
Hand pump	2001	43.23	44.92	38.47	36.47	37.29	40.99
	2011	33.70	39.24	44.59	58.14	40.47	36.75
Tube well/ Borehole	2001	0.98	1.81	2.58	0.87	1.42	1.63
	2011	9.78	12.51	16.27	3.84	4.83	9.59
Well	2001	0.08	0.96	1.90	10.39	3.15	1.94
	2011	0.29	0.38	0.86	4.51	1.74	0.83
Tank, pond lakes	2001	0.13	0.06	0.16	0.02	0.09	0.10
	2011	0.30	0.22	0.26	0.23	0.16	0.22
Others	2001	0.84	1.24	0.49	0.72	0.55	0.8
	2011	1.36	1.21	1.06	1.02	0.81	1.06

5.2. Access to Bathroom Facilities

Table 3 shows trends in the distribution of households by the availability ofbathroom facilities inside households. It is obvious that the percentage share of households having bathroom facility has been much higher in urban areas than in the rural areas. Moreover, number of households with bathroom facilities has significantly increased in 2011 over 2001. Acrossthe State in rural areas it has increased from 19.91% in 2001 to 46.41% in 2011 and from 63.77% to 84.62% in urban areas. The Census 2011 also reported number of households having bathroom enclosing without roof and at the state level there were 29% such households in rural areas and about 15% in urban areas respectively.

While comparing the pattern of availability of household bathroom among various regions of the state, it is found that in 2011NUGP (91.86%) accounted for the highest percentage followed by CR (85.3%), , SUGP (81.6%),SR (80.4%) and then ER which is the lowest (78.59%). As regards rural areas, by 2011 while number of households with bathroom facilities has substantially increased, however more than half of them still do not have a proper roof for cover.

Table 3: Region-wise percentage distribution of households having bathroom facilities

Region	2001			2011		
	Rural	Urban	Total	Rural	Urban	Total
NUGP	37.97	72.93	49.56	70.0 (30.12)	91.86 (11.14)	78.72 (22.54)
SUGP	15.88	58.79	25.56	45.82 (30.12)	81.58 (16.54)	54.69 (26.75)
CR	23.33	66.52	34.05	49.94 (36.51)	85.34 (14.53)	59.48 (30.59)
SR	19.64	53.51	26.75	43.92 (29.31)	80.43 (21.53)	52.02 (27.59)
ER	15.44	59.02	20.30	39.11 (26.10)	78.49 (16.79)	43.79 (24.99)
STATE	19.91	63.77	28.72	46.56 (29.41)	84.62 (14.90)	55.17 (26.12)

Note: Figures in parentheses are the percentage of households having bathrooms enclosed without roof.

5.3. Access to Toilet Facilities

As per the Census 2011 it is found that over three quarter of the rural households in the state do not have access to any kind of toilet facility either inside the house or on the homestead, while in urban areas the situation appears to be much better with only about 16% households not having direct access. State and regional pattern of availability of household toilets for 2001 and 2011 is presented in Table 4. It is noted that during the last decade apparently the state has not made significant improvements in terms of percentage of households with direct access to toilets.

Table 4: Region-wise distribution of household level toilet availability (%)

Region	Location	2001				2011			
		Pit Latrines	Water Closet toilet	Other Toilets	No Toilet	Pit Latrines	Water Closet toilet	Other Toilet	No Toilet
NUGP	Total	16.63	13.52	27.64	42.20	7.67	55.72	4.38	32.23
	Rural	14.58	4.71	23.69	57.01	10.13	36.20	4.59	49.08
	Urban	20.78	31.31	35.62	12.29	3.97	85.11	4.07	6.85
SUGP	Total	11.43	7.98	16.45	64.14	4.10	30.91	2.51	62.48
	Rural	9.66	1.96	11.23	77.15	4.56	16.22	1.77	77.44
	Urban	17.50	28.65	34.38	19.47	2.68	75.48	4.74	17.10
CR	Total	10.60	9.46	10.91	69.04	3.66	29.51	0.92	65.91
	Rural	7.93	1.09	5.60	85.38	4.32	11.44	0.65	83.58
	Urban	18.67	34.80	26.99	19.55	1.85	78.50	1.63	18.02
SR	Total	9.36	8.13	8.05	74.46	5.12	25.13	0.62	69.13
	Rural	7.80	2.07	5.04	85.09	5.81	13.58	0.47	80.14
	Urban	15.21	30.97	19.40	34.42	2.70	65.69	1.13	30.48
ER	Total	7.10	5.10	7.19	80.61	2.84	18.67	0.53	77.97
	Rural	6.01	1.44	5.13	87.42	2.82	11.79	0.46	84.92
	Urban	15.76	34.25	23.66	26.33	3.00	69.55	1.06	26.38
STATE	Total	10.29	7.98	13.16	68.57	4.18	29.77	1.70	64.35
	Rural	8.34	1.95	8.94	80.77	4.54	15.91	1.31	78.23
	Urban	18.07	31.98	29.96	19.99	2.94	77.17	3.00	16.89

The Census has classified toilets in three types, apparently based on the design features of platform and also the sub-structure. These are namely, pit latrines, water closet toilets (i.e., with a water seal) and other toilets. However, there appears to be lack of clarity in this classification with regard to pit toilet being with or without a water seal, the final disposal arrangement in the case of w/c toilets and 'other toilets'. The data indicate shift away from pit latrines and towards water closet toilets – the latter offering improved aesthetics and experience. The share of 'other toilet' facilities has also declined in all the regions. Among the various regions, urban areas in SUGP and NUGP have achieved fairly high sanitation coverage ranging from 82 – 93% respectively.

5.4. Sources of Cooking Fuel

Table 6 shows the distribution of households in the State by sources of cooking fuel. In rural areas, firewood is the major source of cooking fuel in both the census periods. It is followed by cow dung and crop residue. Contrary to this, LPG is the major source in urban areas, followed by firewood. It is interesting to know that the percentage shares of households having firewood and LPG as cooking fuel in rural areas have increased in 2011 compared to 2001, while the share of households using cow dung and crop residue has declined. Rural households using kerosene, biogas, and electricity as cooking fuel have negligible share. In urban areas, as expected, the

percentage share of households using firewood, cow dung, kerosene, crop residue and coal has declined while the share of LPG has increased substantially.

Table 6: Percentage Distribution of Households by Sources of Cooking Fuel in Uttar Pradesh

Sources	2001			2011		
	Rural	Urban	Total	Rural	Urban	Total
Firewood	47.74	30.42	44.26	54.40	24.82	47.71
Crop residue	16.20	4.00	13.75	10.50	2.55	8.70
Cow dung	32.36	7.36	27.34	27.86	6.91	23.12
Coal, Lignite, Charcoal	0.10	1.55	0.39	0.12	0.27	0.25
Kerosene	0.48	9.46	2.28	0.23	2.43	0.72
LPG	2.60	46.01	11.31	6.39	61.75	18.91
Electricity	0.11	0.28	0.14	0.08	0.12	0.09
Biogas	0.16	0.44	0.22	0.13	0.24	0.16
Any other	0.13	0.15	0.14	0.12	0.13	0.12
No cooking	0.13	0.34	0.18	0.18	0.34	0.22

Table 7presentsregion-wise distribution of households by sources of lighting. All Regions in the state except for NUGP showkerosene as major source of lighting followed by electricity. However in the case of NUGR by 2011 electricity has become the major source of lighting.

Table 7: Region-wise distribution of Households By Source of Lighting in Uttar Pradesh (%)

Region	Location	Electricity		Kerosene		Solar energy		Other oil		Any other		No lighting	
		2001	2011	2001	2011	2001	2011	2001	2011	2001	2011	2001	2011
NUGP	Total	49.18	57.24	50.16	41.01	0.28	0.40	0.10	0.33	0.12	0.75	0.15	0.26
	Urban	82.53	86.36	16.79	11.83	0.21	0.21	0.07	0.27	0.17	0.91	0.23	0.42
SUGP	Total	29.09	37.11	70.18	61.61	0.38	0.44	0.11	0.32	0.10	0.27	0.14	0.25
	Urban	76.28	78.45	22.86	20.28	0.28	0.21	0.09	0.24	0.16	0.34	0.33	0.49
CR	Total	29.91	32.96	69.44	65.80	0.35	0.61	0.09	0.22	0.07	0.19	0.14	0.22
	Urban	82.48	82.37	16.65	16.46	0.24	0.19	0.13	0.22	0.17	0.31	0.33	0.44
SR	Total	24.00	33.50	75.22	65.42	0.52	0.54	0.08	0.26	0.09	0.15	0.10	0.14
	Urban	69.52	73.76	29.62	25.21	0.32	0.20	0.09	0.27	0.16	0.24	0.29	0.32
ER	Total	28.80	30.39	70.56	68.61	0.37	0.46	0.08	0.24	0.08	0.16	0.11	0.15
	Urban	81.42	79.76	17.92	19.22	0.23	0.24	0.08	0.23	0.12	0.24	0.23	0.31
U P	Total	31.90	36.93	67.43	61.84	0.36	0.47	0.09	0.27	0.09	0.29	0.13	0.20
	Urban	79.91	81.54	19.31	17.11	0.24	0.21	0.09	0.24	0.16	0.47	0.28	0.41

Source: Census 2001, 2011

In urban areas, electricity is the major source, followed by kerosene for all the regions. It is interesting to know that the percentage shares of households having electricity as source of lighting have increased in 2011 census over the 2001 census, while the share of households using kerosene has declined. Households using solar energy, other oil, and any other source of lighting have negligible share in the total number of households.

6.0. Trends in Per Capita Consumption Expenditure

Monthly per capita expenditure (MPCE) pattern across urban and rural areas of the state on food and non-food items is presented in Table 8. It is noted that at current market prices, average MPCE in rural areas has increased from Rs.274 in 1993-94 to 832 in 2009-10, while in urban areas, it has increased from Rs.389 to Rs.1512 during the same period which is far more than the rise recorded for the rural areas. For instance, the ratio of MPCE in urban areas to rural areas has increased from 1.42 in 1993-94 to 1.82 in 2009-10 suggesting that disparities between rural and urban areashave increased overtime. The data also indicate that the percentage share of food

items in the total MPCE has been continuously declining in both the rural and urban areas. However, on an average, the share of food items in the MPCE has been higher in rural areas than the urban areas, whereas it is just reverse in regard of the share of non-food items. For instance, in 2009-10, an average consumer in urban areas spent about 60 percent of its total MPCE on non-food items, whereas its counterpart in rural areas spent only about 40 percent.

Table 8: Trend in per capita monthly consumption expenditure on food and non-food items in Uttar Pradesh (nominal values)

Year	Average MPCE (Rs)		Percentage share of Food in MPCE		Percentage share of Non-food in MPCE	
	Rural	Urban	Rural	Urban	Rural	Urban
1993-94	274	389	61.50	56.00	38.50	44.00
1999-00	467	690	57.42	50.49	42.58	49.51
2004-05	647	978	53.45	47.13	46.55	52.87
2009-10	832	1512	53.74	40.24	46.26	59.76

Source: compiled from various NSS reports

6.1 Nutritional Status of Rural and Urban Households

The datacompiled from various NSSO rounds on per capita intake of calories, protein and fats in rural and urban households in Uttar Pradesh and India is presented in Table 9. A perusal of the Table 9 reveals that average per capita calories intake has been higher in rural households than urban households in Uttar Pradesh and India both. For instance, as against anintake of 2575 calories per capita in rural Uttar Pradesh (1972-73), in rural India it was lower by 12% at only 2266. However, over the years this gas is found to have narrowed down. On the other hand in the case of urban areas, the difference in calorie intake between Uttar Pradesh and India is found to be significant with some years shown a reverse trend compared to the rural areas. In general, per capita calories intake both in rural and urban areas in Uttar Pradesh and India shows a declining trend.

As regards protein intake,it is found to have declined both across the country as well as in Uttar Pradesh. In UP it has registered a sharper decline from 76 MG in 1972-73 to 63.3 MG in 2009-10; while in India, the corresponding values are 62 MG and 59.3 MG respectively. In case of urban households of Uttar Pradesh, it has increased from 62 MG in 1972-73 to 65.10 MG in 2004-05 and then declined to 60.10 MG in 2009-10; whereas in urban India, it increased from 56 MG in 1972-73 to 58.50 MG in 1999-00 and then declined to 57 MG in 2004-05. In 2009-10, the per capita protein intake has reached the peak of 58.80 MG in urban India and 60.1 in urban UP.

Table 9: Trends in per capita intake of calories, protein and fats in Rural and Urban Households in Uttar Pradesh

Year	Calorie (K.cl)				Protein (MG)				Fat (MG)			
	Uttar Pradesh		India		Uttar Pradesh		India		Uttar Pradesh		India	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1972-73	2575	2161	2266	2107	76.0	62.00	62.0	56.00	28.0	35.00	24.0	36.00
1983	2399	2043	2221	2089	73.0	62.00	62.0	57.00	29.0	34.00	27.0	37.00
1993-94	2307	2114	2153	2071	70.4	63.20	60.2	57.20	35.5	41.20	31.4	42.00
1999-00	2327	2131	2149	2156	69.7	62.00	59.1	58.50	37.6	45.50	36.1	49.60
2004-05	2200	2124	2047	2020	65.9	65.10	57.0	57.00	37.5	46.10	35.5	47.50
2009-10	2181	2072	2147	2123	63.3	60.10	59.3	58.80	40.3	45.70	43.1	53.0

Source: various NNSO Rounds

On the other hand it is noted that the average per capita intake of fats in rural and urban areas both across Uttar Pradesh and all-India shows increasing trend. In rural areas, it has increased from 28 MG in 1972-73 to 40.3 MG in 2009-10, while the corresponding increase in urban areas has been from 35 MG to 45.70 MG. At all India level, per capita intake of fats has gone up from 24.0 MG in 1972-73 to 43.70 MG in 2009-10 in rural areas and from 36.0 MG to 53.0 MG in urban areas. The trends show that the average per capita calories and protein intakes in rural and urban areas have declined, while the intake of fats has increased in both Uttar Pradesh and India.

As shown in Table 10 it is also noted that the percentage share of cereals in the total calories intake has significantly declined during the last 15 years both in rural and urban areas. In Uttar Pradesh, the share of cereals has declined from 69% in 1993-94 to 63% in rural areas and from 59% to 55% in urban areas. At all-India level, the percentage share declined from 71% to 60% in rural areas and from 58% to 50% in urban areas during the same period. This implies that over the period, share of non-cereals food items in the total calories intake has increased significantly, especially in the urban areas. For instance in 2009-10, almost 50% of total calories requirement in urban areas at all-India level was met from consumption of non-cereal food items, such as milk & milk products, meat, fish & eggs and fruits & vegetables, etc. Therefore, national food security should not be viewed only in terms of availability and accessibility of cereals but also in terms of overall food items.

Table 10: Trend in the percentage share of cereals and other food items in the total calories Intake

Year	Uttar Pradesh				India			
	Rural		Urban		Rural		Urban	
	Cereals	Others	Cereals	Others	Cereals	Others	Cereals	Others
1993-94	68.67	31.33	59.37	40.63	71.01	28.99	58.52	41.48
1999-00	66.73	33.27	57.4	42.6	67.55	32.45	55.05	44.95
2004-05	66.91	33.09	58.47	41.52	67.54	32.31	56.08	43.84
2009-10	62.99	37.01	55.47	44.51	60.38	39.5	50.37	49.55

Source: Compiled from various NSS reports

Percentage share of different food items in the total protein intake in rural and urban areas in Uttar Pradesh and India is shown in Table 11. The share of cereals in the total protein intake has declined from 70.2% in 1993-94 to 66.1% in 2009-10 in rural areas in Uttar Pradesh. Share of pulses in the total protein intake has also declined after 1999-00. Share of milk and milk products first declined from 10.3% in 1993-94 to 9.2% in 1999-00 and then increased to 9.7% in 2009-10, whereas share of meat, fish & eggs has varied in a range of 1.5% to 2.3%. Other food items show a continuous increase in their share in the total protein intake.

Table 11: Percentage share of different food items in the total protein intake

Source of Protein	Uttar Pradesh				India			
	1993-94	1999-00	2004-05	2009-10	1993-94	1999-00	2004-05	2009-10
RURAL								
Cereals	70.2	68.86	69.17	66.1	69.42	67.43	66.37	60.18
Pulses	10.58	11.52	9.61	8.78	9.76	10.91	9.47	8.28
Milk & milk Products	10.32	9.24	9.48	9.7	8.81	9.19	9.28	9.37
Meat, Fish & eggs	1.5	2.33	1.56	2.17	3.66	4.04	3.98	5.85
Others	7.4	8.05	10.18	13.25	8.35	8.43	10.84	16.25
URBAN								
Cereals	63.52	62.29	60.7	60.11	59.41	57.03	56.16	51.25
Pulses	11.32	12.08	9.75	9.33	11.54	13.1	11.00	10.14
Milk % milk Products	11.95	11.76	10.64	12.1	11.66	12.43	12.33	12.53
Meat, Fish & eggs	3.31	3.69	3.33	3.27	5.29	5.98	5.47	7.57
Others	9.9	10.18	15.58	15.18	12.1	11.46	15.04	18.46

At the all-India level also, share of cereals and pulses in the total protein intake has declined during the period 1993-94 to 2009-10, while the share of milk & milk products, meat, fish & eggs and others has increased during the same period. Table 11 also reveals that rural households in

Uttar Pradesh use more cereals, pulses and milk &milk products in their diet to get protein than their counterparts in other parts of the country, while urban households in India relatively use more meat, fish & eggs and other food items in their diet to get protein than their counterparts in Uttar Pradesh.

In urban Uttar Pradesh also, the share of cereals in the total protein intake has declined slightly from 63.52% in 1993-94 to 60.11% in 2009-10. In the case of pulses, the share has varied in a narrow range from 9.3% to 12.08%. As far as milk & milk products group is concerned, it is observed that its share in the total protein intake has also remained in a narrow range from 10.6% to 12%. In the case of meat, fish & eggs the share in the total protein intake has not varied much either.

It can be concluded from the analysis of the data shown in Table 11 that the share of food grains (cereals plus pulses) in the total protein intake has declined during the last 15 years, while that of other food items has increased during the same period. The shares of milk & milk products and meat, fish & eggs have remained more or less stable since 1999-00. However, at all-India level, the results are found slightly different. On an average, the share of food grains (cereals + pluses) in the total protein intake is much lower in urban India than in the urban Uttar Pradesh. The share of meat, fish & eggs and other food items, on the contrary, is observed to be higher in urban India than in urban Uttar Pradesh.

7.0. Urban Occupational Structure

Trends in occupational structure of urban workforce are shown in Figure 15. It is significant to note that the percentage share of self-employment in the total employment has constantly increased up to 2004-05 and, thereafter, it declined in 2009-10. As the Figure brings to the fore, between 1987-88 and 2004-05, the share of self-employment increased by 3.7 percent point, while between 2004-05 and 2009-10, it declined by 5.8 percent point. The data, however, do not suggest whether it was a distress kind of self-employment or a growth-induced self-employment. For instance, if workers do not get regular salary or wage-employment due to shrinking of jobs in the organized sector, they would be forced to undertake their petty and lesser gainful self-employment in the informal sector of the economy. Contrary to this, if well-educated and trained workers initiate self-employment activities in the emerging sectors, this kind of employment would be desirable for the economy as these activities would also generate gainful wage employment for other workers as well.

Figure 15 also indicates that the share of regular wage/salary employment remained more or less stable at 34 percent up to 2004-05. However, after 2004-05, there has been about 4 percent point decline in its share in 2009-10. No need to emphasize that regular salaried employment is qualitatively better than the other forms of employment. A decline in its share in 2009-10 is a serious issue suggesting that the fast growth of the formal economy of India could not generate adequate regular employment to the workforce. In fact, during the last one decade or more, there

has been a tendency of informalisation of formal employment, adversely affecting the quality of employment in the economy. Another important fact revealed by Figure 15 is that between 1999-00 and 2004-05,casualization of urban workforce declined by 1.6 percent point, while between 2004-05 and 2009-10, it increased by 3.9 percent point. Thus, during the last five years, regular and self-employment declined, whereas casual employment has increased, indicating towards the deterioration in the quality of employment in the urban areas.

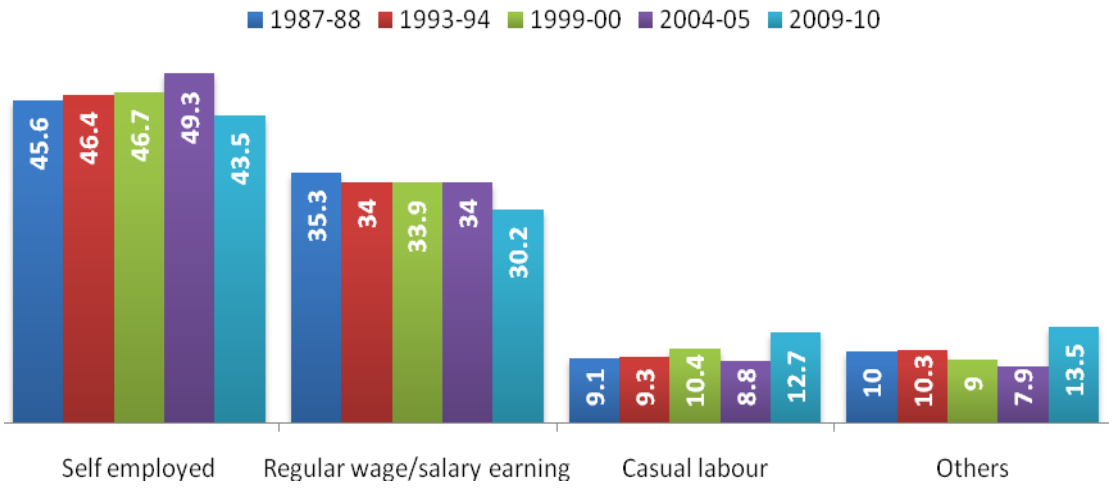
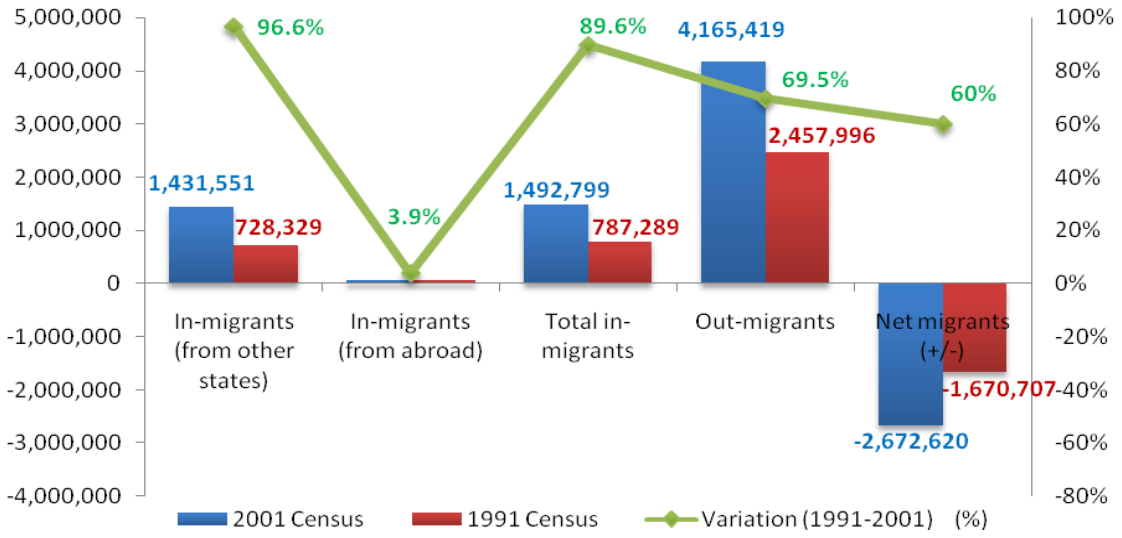


Figure 15: Household Main Occupation (%) in urban areas, Uttar Pradesh, 1983-2010

8.0 Trends in Migration

There are four types of migration streams—rural to rural, rural to urban, urban to urban and urban to rural. Rural-to-urban and urban-to-urban migrations area are the relevant issuesin the context of the present study. Rural to urban and urban to urban migration is indicative of urban centres as engines of growth. Thus, urbanization depends on three factors—natural growth of population, rural to urban migration and reclassification of rural areas as urban in course of time. As far as total in-migration in Uttar Pradesh is concerned, we find that both in-migrants and out-migrants have significantly increased in 2001 when compared to the data of Census 1991. However, out-migration was much higher than in-migration in both decades . Net migration (in-migration minus out-migration) has remained negative in the state, indicating that number of persons going out of the state was higher than the number coming to the State.



*Uttar Pradesh(includingUttaranchalfor2001Census)

Figure 16: Variation in Migration Profile between for Uttar Pradesh based on Migrants by last residence, 1991-2001 (Duration 0-9 years)

Figure 16 shows that number of net out-migrants has increased from 1.67 lakhs in 1991 to 2.67 lakhs in 2001. Lack of adequate employment and income opportunities to the people of the State forced them to move out in search of better livelihood opportunities outside the State. In 1991, urban areas constituted only 25.44% of total migrants of the State. Its share in the total migrants increased to 28.8% in 2001. Contrary to this, the share of urban area in total female migrants has declined from 10.74% in 1991 to 9.55% in 2001. Figure 17 clearly shows that relatively, the share of rural area in the total female migrants has been higher than their male counterparts. It has also increased in 2001 census over the 1991 census.

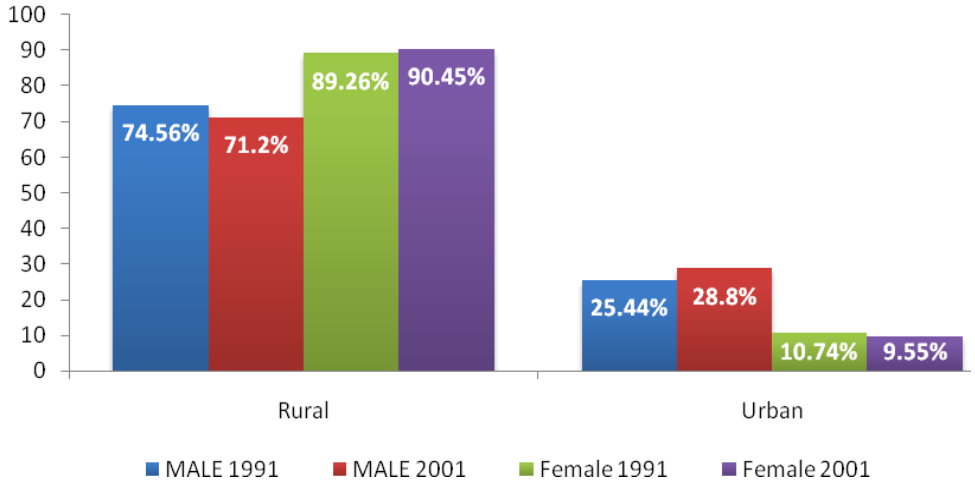


Figure 17: Trends in the Percentage Share of Rural and Urban Migrants in total Migrants (U.P.)

Figure18 demonstartes the percentage share of different migration streams in total rural and urban migration. In case of male migrants, the share of rural to rural migration in the total rural

migrants has declined from 61.8% in 1991 to 54.7% in 2001; contrary to this, the percentage share of rural to rural female migrants to the total rural female migrants has remaind more or less stable during 1991-2001. Figure 18 also reveals that percentage share of rural to rural migrants is much higher for rural female than the rural males. Contrary to this, percentage share of rural to urban migrants for rural males is much higher than the rural females. Moreover, percentage share of rural to urban migrants in case of rural males has significantly increased from 38.21 in 1991 to 45.35 in 2009-10, whereas in the case of females, it has increased marginally from 8.6 to 9.17 during the same period. As far as urban to rural migration is concerned, it has declined in 2001 over 1991 in case of both male and female migrants, while there has been an increase in the share of urban to urban migration in case of both male and female migrants.

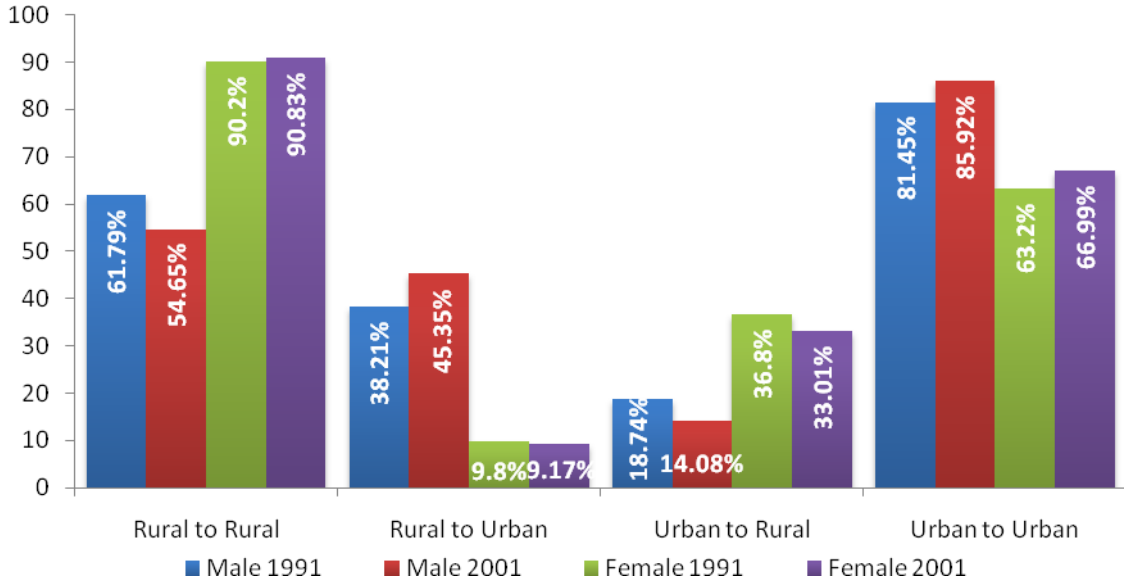


Figure 18: Percentage Share of Different Migration Streams in Total Rural and Urban Migration

Table 12 shows details of total migrants in the State for different migration streams. It is noted that the number of migrants in the State has increased by 22% from 29.19 million in 1991 to 35.65 million in 2001. The share of male migrant declined from 14.52% in 1991 to 12.38% in 2001, while the corresponding share of female migrants increased from 85.48% to 87.62%. Total rural constitute 87.11% and 88.06% of the total migrants respectively in 1991 and 2001. Thus, total urban migrants comprise only about 12-13% of the total migration. Further, out of total rural migrants, share of rural to rural migrants is 86.67% in 1991 and 87.23% in 2001. Thus, rural to urban migration consists of only about 13% of the total rural migration. As far as urban to urban migration is concerned, it is observed that its share in the total urban migration has increased from 68.35% in 1991 to 72.77 in 2001. This shows that the percentage share of urban to rural migration has declined by 4.42 percent point during the period 1991-2001.

Table12: Stream-wise percentage share of male and female migrants in the total migrants in Uttar Pradesh

Migration Stream	Total (in Million)		Male (%)		Female (%)	
	1991	2001	1991	2001	1991	2001
Total Migrants	29.19	35.65	14.52	12.38	85.48	87.62
Total Rural Migrants	25.43	31.39	12.42	10.01	87.58	89.99
Rural to Rural	22.04	27.38	8.86	6.27	91.14	93.73
Rural to Urban	3.39	4.02	35.6	35.49	64.4	64.51
Total Urban Migrants	3.76	4.26	28.69	29.87	71.31	70.13
Urban to Rural	1.19	1.1	17	15.38	83	84.62
Urban to Urban	2.57	3.1	34.15	35.33	65.85	64.67

Gender-wise distribution of migrants show that share of female migrants in the total migrants has increased from 85.48% in 1991 to 87.62% in 2001, while the corresponding share of female migrants in the total migrants has declined, as is obvious from the Table 12. More or less same pattern is observed in case of total rural migrants and rural to rural migrants. However, in the case of rural to urban migration, there is not much difference across censuses, though the percent share of female migrants in the total urban migrants is much higher than their male counterparts in both the censuses. Similarly, the share of female migrants in the total urban to rural migration is also observed to be much higher than that of male migrants in both the censuses. Moreover, the share of female migrants has increased in 2001 over 1991.

8.1 Regional Pattern of Rural-Urban Migration in Uttar Pradesh

8.1.1 Region-wise and Gender-wise Distribution of Rural-Urban Migration Rates

Figure 19 shows region-wise rural-urban migration rates in Uttar Pradesh for the last two censuses, separately for male and female population. As far as rural–urban migration rates are concerned, Figure 19 clearly shows that except for NUGP, rural to urban migration rates have either remained stagnant or declined in 2001 as compared to the figures of 1991. The highest decline in the migration rate is observed in the CR, followed by ER. In the case of male population, the rural–urban migration rate has increased from 6.34 percent in 1991 to 8.49 percent in 2001 in NUGP. It is interesting to note that the rural-urban migration rates of male population have declined in 2001 over 1991 in all the regions of the State, except for the NUGP.

On an average, rural-urban migration rates in both the censuses are higher for female population than the male population. One of the main factors in this context is marriage. Moreover, their

migration is also closely associated with the migration of their husbands as husband migrates from rural to urban area, in most of the cases his wife and children also migrate with him.

Another fact emerged from the perusal of Figure 19 is that the migration rates vary across regions. The rural-urban migration rates are found highest in economically backward region SR, followed by CR and ER. However, increase in the migration rate in 2001 over 1991 is observed highest in the NUGP, followed by SUGP. It may be relevant to note that rural –urban migration may be due to push factors (distress factors) or due to pull factors (growth induced factors). The high intensity of rural-urban migration in SR is largely due to distress factors, while increase in the rural-urban migration rate in the Upper Ganga Plains (north and south both) is mainly due to pull factors.

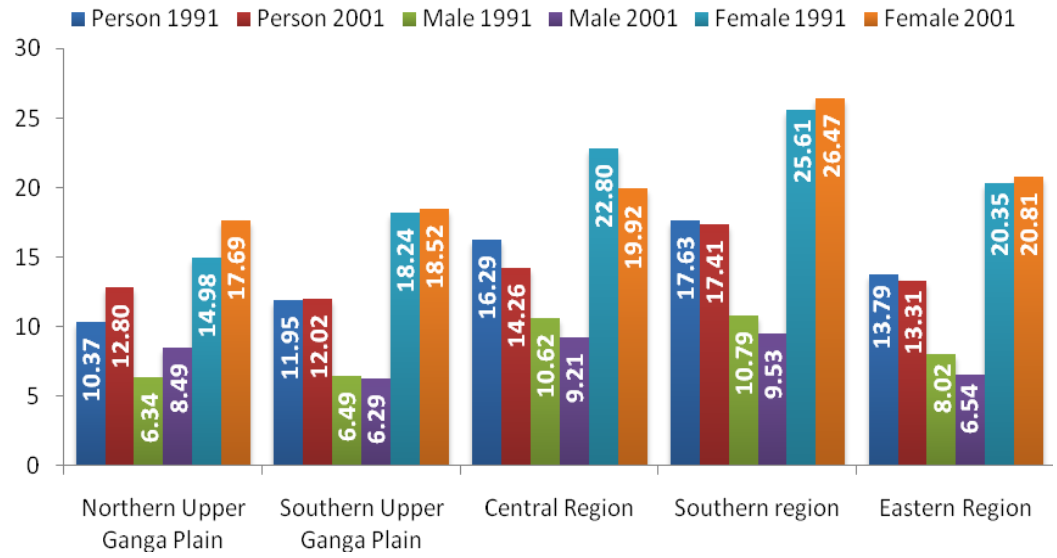


Figure 19: Rural-Urban Migration Rates in U.P. (1991-2001, last residence elsewhere in India)

8.1.2 Region-wise and Gender-wise Rural -Urban Migration Rates of Workers

While estimating rural-urban migration rates of workers, it is interesting to find that there has been an increase in the migration rates of workers across all the regions in 2001 as compared to 1991. For combined population the increase is found to be highest in NUGP, closely followed by SR. It is found to be the lowest in the CR, followed by the ER. Figure 20 demonstrates that in case of male workers, the migration rate is observed to be the highest in SR, followed by CR and ER. However, the increase in the migration rates in 2001 over 1991 is observed highest in NUGP, followed by SUGP. This clearly indicates that although the intensity of migration is highest in SR, followed by CR and ER, the growth in migration rates is highest in NUGP, followed by SUGP.

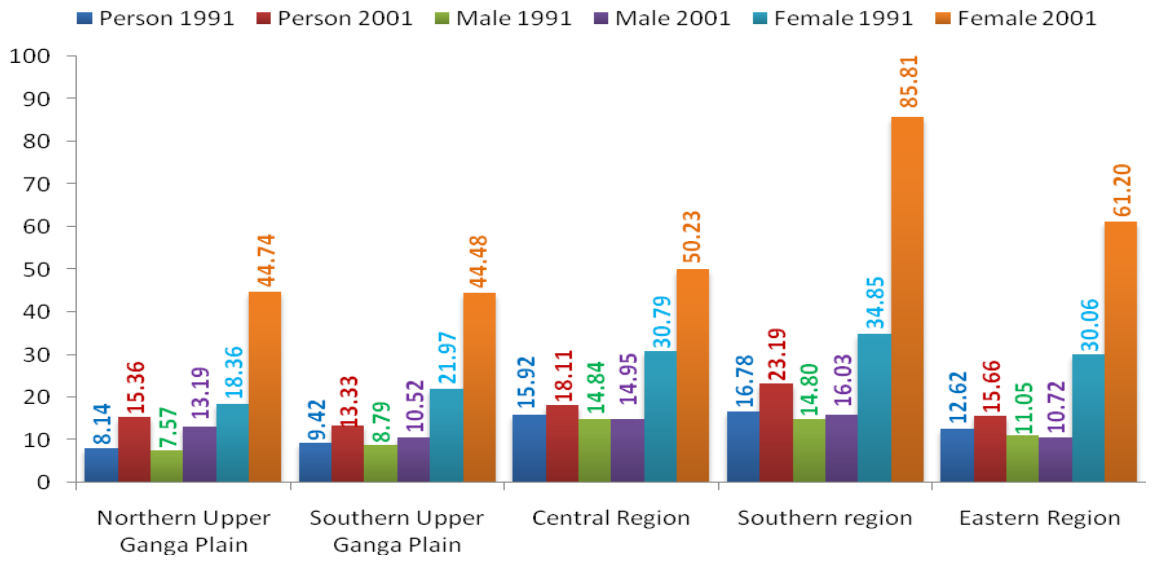


Figure 20: Region-wise Rural to Urban Migration Rate of workers in Uttar Pradesh (1991-2001, last residence elsewhere in India)

In case of women workers, the rate is found to be the highest in SR, followed by ER and CR. It is observed to be the lowest in Upper Ganga Plains. Figure 20 shows that the migration rates among female workers are much higher than their male counterparts across regions. Moreover, the increase in these rates is also observed to be higher in case of female workers than their male counterparts. Observing the region-wise rates, it is found to be the highest in SR, followed by ER and CR. Further, increase in the rate in 2001 over 1991 is estimated highest in SR followed by NUGP and ER. It may also be noted that higher rural–urban migration rates among female workers than the male workers is due to the fact that the work participation rate among female is much lower in comparison to the male population. As the rural-urban migration rate among workers is the ratio of rural to urban migrant workers to the total urban workers. Since number of female urban workers is much lower than the male workers, the migration rate of female workers is affected by the low base of urban female workers.

8.1.3: Occupation-wise Distribution of Rural- Urban Migrant workers

Occupation-wise distribution of rural to urban migrant workers in 2001 is exhibited by Figure 21. The figure shows that other services, including public services constitute the highest share (24%) in the total rural to urban migration. It is followed by electricity, gas and water supply (16%), transport, storage and communication (14%), wholesale and retail trades (9%), and construction and household industries (7% each). The percentage shares of farmers, agricultural labour and mining and quarrying and non-household industries in the total rural to urban migration of workers are observed to be quite low.

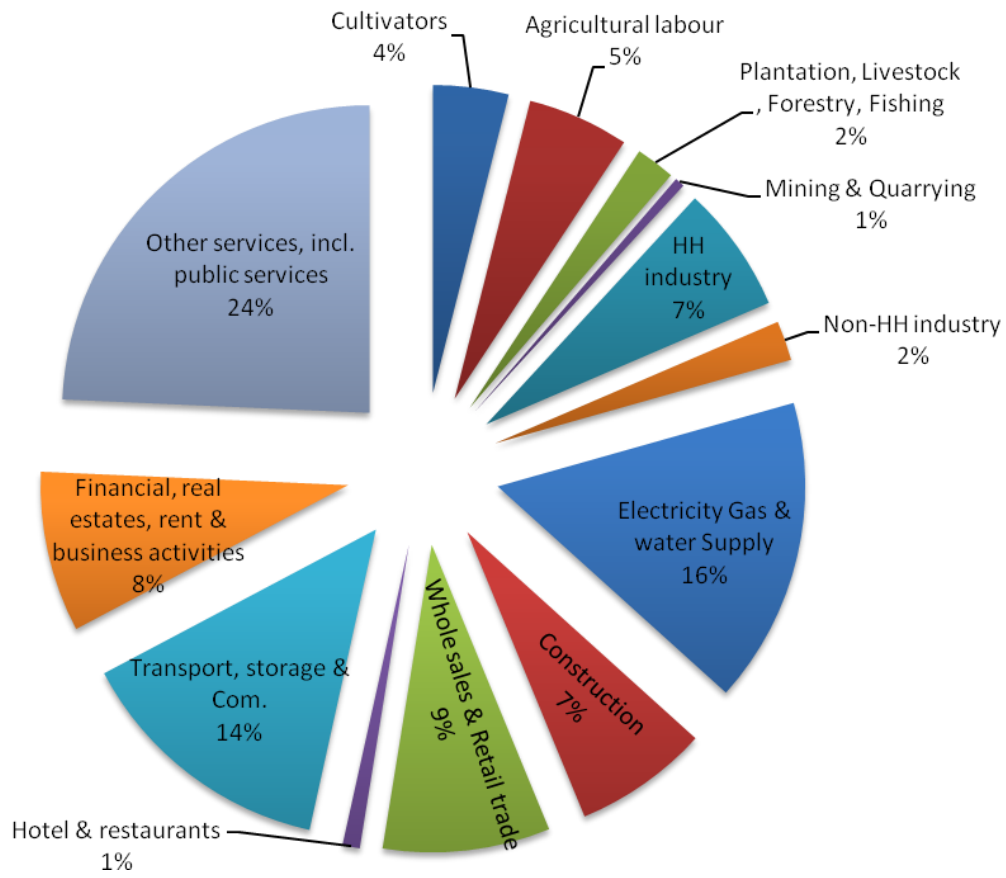


Figure 21: Occupational Classification of Rural to Urban Migrant Workers in U.P. in 2001

9.0. Condition of Slums

Uttar Pradesh has 60 Class I and 46 Class II cities. These cities together have about 286 million people. A majority of them lives in slums where the living conditions and basic amenities are quite dismal. The State has 775 notified and 1868 non-notified slums, with total 2,27,799 households. Table 13 shows that the population of slums in the State has increased by 123% from 26 lakh in 1981 to 58 lakh in 1991 and then further by 33% to 77 lakh in 2001, whereas at the all-India level, it went up by 66% from 279 lakh in 1981 to 463 lakh in 1991 and then further by 33% to 618 lakh in 2001.The percentage of slum population in the state has increased from 13 % in 1981 to 21 % in 1991 and the fraction remains the same in 2001, whereas at all India level, it went up from 17.50% in 1981 to 21.30 % in 1991 and to in 2001.

Table 13 also indicates that class-I towns and cities have substantially higher growth of slum population than class-II towns. Class-I towns in the state account for 29 lakh slum population in 1981 which increased to 31.45 lakh in 1991 and further to 42.35 lakh in 2001. Class-II towns report 6.3 lakh slum population in 1981 which increased to 8.6 lakh in 1991 and further to 11.7 lakh in 2001.

Table 13: Identified/Estimated Slum Population (in Lakh) in Uttar Pradesh (During 1981, 1991 & 2001)

	Urban Population			Identified Slum Population			Percentage of slum Population		
	1981	1991	2001	1981	1991	2001	1981	1991	2001
Uttar Pradesh	198.90	276.06	365.40	25.80	58.39	77.10	13.00	21.10	21.10
India	1594.63	2176.11	2909.44	279.14	462.61	618.26	17.50	21.30	21.30

Class-I Towns and Cities

	Urban Population			Identified Slum Population			Percentage of slum Population		
	1981	1991	2001	1981	1991	2001	1981	1991	2001
Uttar Pradesh	110.74	153.34	202.13	29.07	31.45	42.35	26.30	20.50	20.95
India	1023.91	1400.84	1900.55	242.89	314.30	424.50	23.70	22.40	22.34

Class-II Towns and cities

	Urban Population			Identified Slum Population			Percentage of slum Population		
	1981	1991	2001	1981	1991	2001	1981	1991	2001
Uttar Pradesh	24.111	32.669	44.376	6.337	8.66	11.776	26.3	26.5	26.5
India	182.58	236.288	316.286	36.027	47.151	63.922	19.7	20	20.2

Figure 22 presents the proportion of slum population in Class-I and Class-II towns across UP and India. It is noted that the proportion of slum population in Class-I towns is decreasing while it remains stagnant in Class-II towns. The percentage of slum population in Class-I towns of Uttar Pradesh has decreased from 26.3 (1981) to 20.5 in 1991 and 20.95 in 2001, whereas its proportion in Class-II remained stable in three decades.

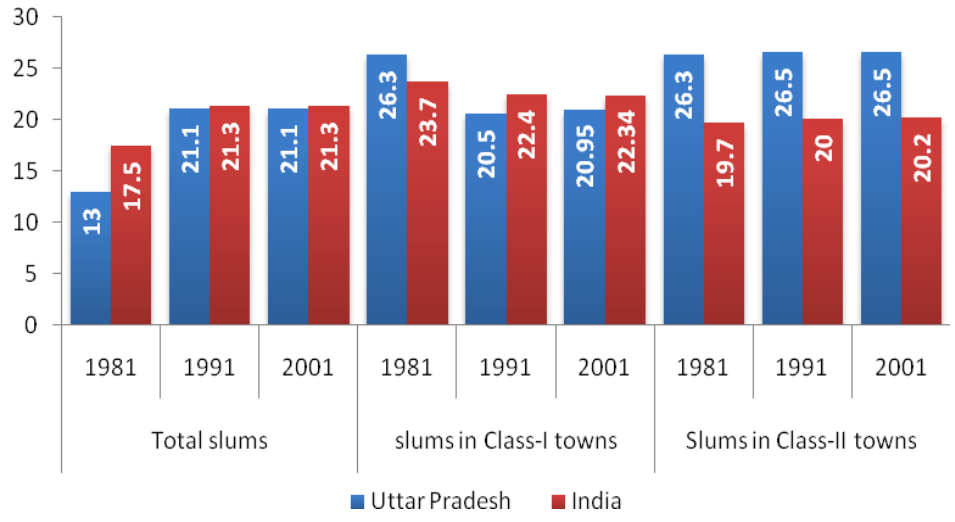


Figure 22: Percentage of slum Population in Uttar Pradesh and India

Figure 23 shows percentage share of notified and non-notified slums for 2002 and 2008. The percentage share of notified slums has increased almost two fold from 29% in 2002 to 56% in 2008, while that of non-notified slums has declined from 71% to 44%.

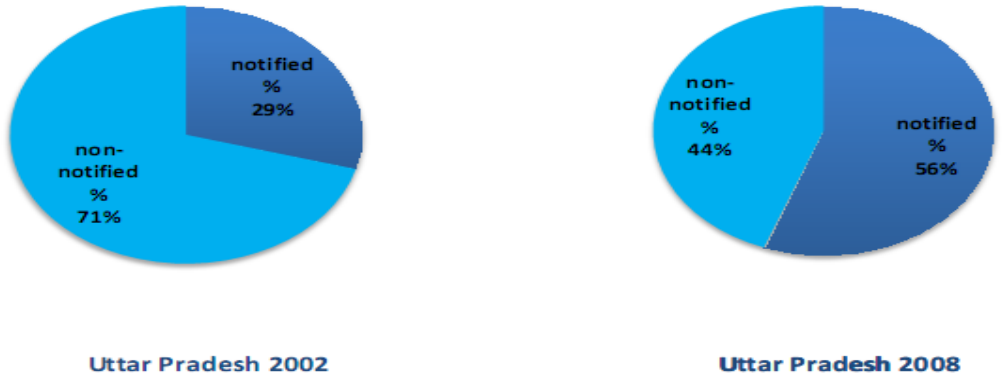


Figure 23: Percentage of notified and non-notified slums in Uttar Pradesh

As far as growth ofslum population in the State is concerned, Figure 24 shows that between 1981 and 2001, it increased by 121.53 percent (about 6% per year), whereas at the all-India level, it recorded a growth of 198.84 percent (9.94% per year). This reveals that slum population in the State grew at a lower rate than the all-India average. This fact is quite obvious as some fast growing states like Gujarat, Maharashtra, Tamil Nadu, Karnataka, Haryana, Delhi, etc. have attracted more people from backward states, including Uttar Pradesh towards their cities. Metropolitan cities such as Mumbai, Delhi (NCR), Bangalore, Ahmadabad, Chennai, Hyderabad Pune, also have high concentration of migrant workers who mostly live in slums. In Uttar Pradesh, as well, big cities like Kanpur, Varanasi, Allahabad, Lucknow, Ghaziabad, Meerut, Agra, etc. have expanded substantially in terms of slum population.

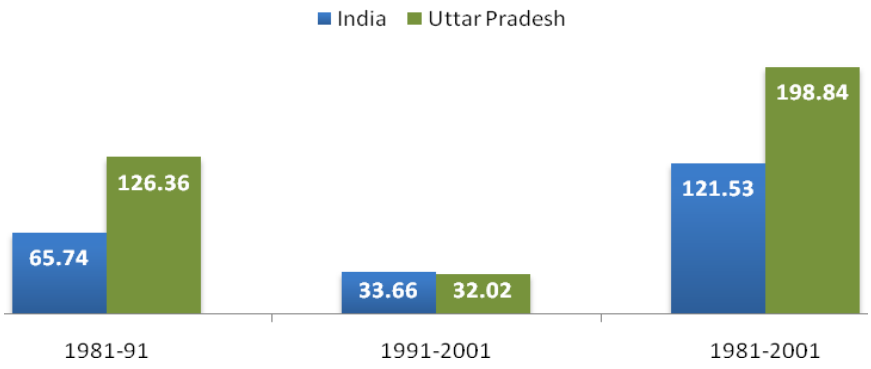


Figure 24: Growth Rate of Slum Population

Figure 25 shows trends in slum population in the three metropolitan cities of the State, namely Kanpur, Lucknow and Varanasi. As the Figure shows, population of these three cities has significantly increased during the last 30 years. The highest increase is observed for the capital city

of Lucknow, followed by Kanpur. Highest number of people living in slums is found to be in Kanpur, followed by Lucknow. It is surprising to note that number of slum dwellers in 1991 over 1981 has declined in these cities. However, the number has again increased in 2001 over 1991. As far as percentage share of slum dwellers in the total population is concerned, Figure 25 shows that in 1981, more than 35 percent of population of Kanpur city resided in slum. However, the percentage significantly declined to the level of about 20% in 1991 and remained more or less at the same level in 2001. Similar pattern is observed in the case of Lucknow and Varanasi.

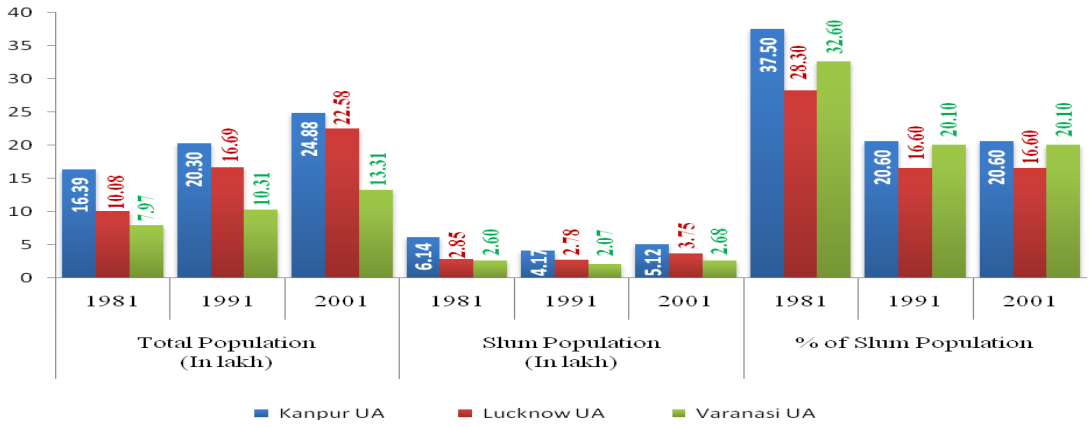


Figure 25: Estimated Slum Population in Metropolitan Cities (Uttar Pradesh)

A majority of slum dwellers in both notified and non-notified slums live in pucca houses. However, percentage of such dwellers is higher in notified slums than the non-notified slums. Figure 26 shows that in notified slums, households living in pucca houses has increased substantially from 61%in 2002 to 89% 2008 whereas in non-notified slums, it increased from 16% in 2002 to a very high 57% in 2008.Over the same period, share of households living in semi-pucca houses in notified and non-notified slums has declined significantlyfrom 38%to just 1%and from 45%to 5% respectively. .

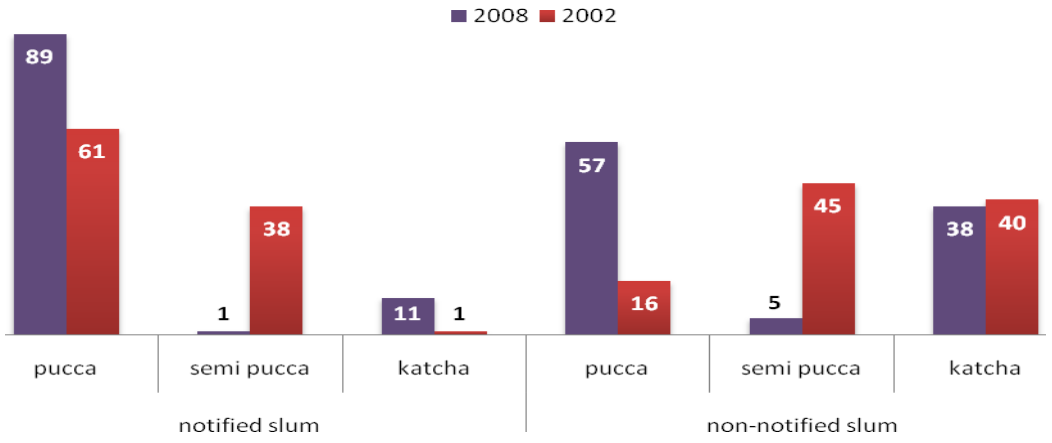


Figure 26: Percentage distribution of slums according to structure of majority of houses in Uttar Pradesh

A majority of slum dwellers in both notified and non-notified slums havetube-well as a major source of drinking water. Figure 27 shows that in notified slums, the difference between the percentage of households shifted from tap (34 % percent in 2002 to 22 percent in 2008) to tube-well (67% in 2002 to 79 % in 2008) is 12 percent whereas in non-notified, it is 35 percent.

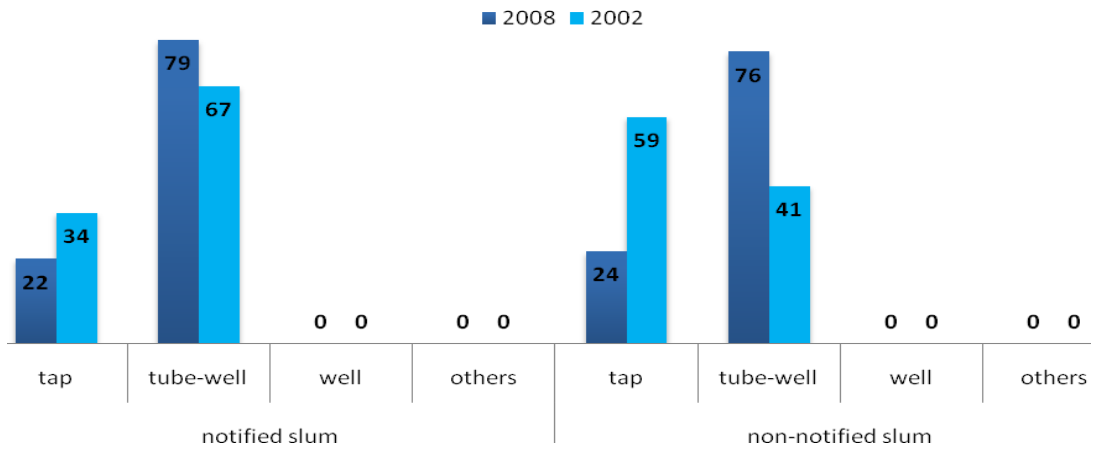


Figure 27: Percentage distribution of slums according to major source of drinking water in Uttar Pradesh

Figure 28 shows the Percentage distribution of slums according to availability of electricity connections in the state. Figure shows maximum proportion of notified slums have electricity in the households and streets. Also, proportion of notified slums having no electricity increased from 1% in 2002 to 15% in 2008.

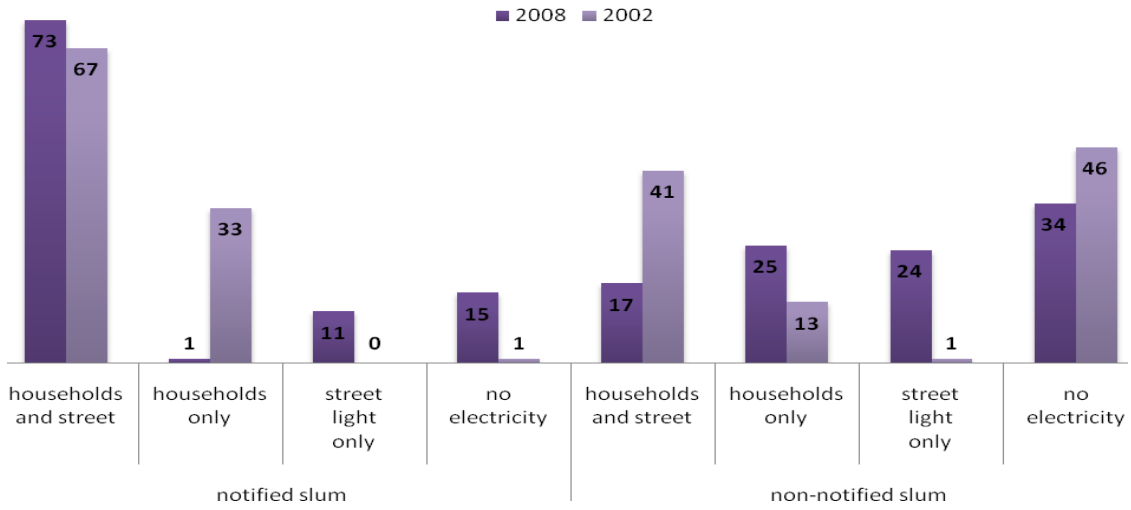


Figure 28: Percentage distribution of slums according to availability of electricity connections In Uttar Pradesh

10.0. State of Industrialization in Uttar Pradesh

Economy of the State is largely agriculture-based as large number of people still draw their livelihood from agriculture; however its growth trajectory has been constantly shifting towards non-agricultural sectors (industries and services). The share of secondary sector has increased from18.7% in 1999-00 to 21.2% 2008-09, while that of service sector has increased from 43.6 in 1999-00 to 47.1% in 2008-09.

As per the State Development Report, about 80 percent of total industries in the State are under SSI sector. Agro-based industries such as sugar mills, distilleries, dairy products, rice mills, fruits & vegetable processing units, other food & brewages, textiles & carpet industry, flour mills, pulse and oil processing units, pulp and paper industries, plywood & wood products, tobacco products, chemical fertilizers, pesticides, leather goods, agro-machinery, and handicrafts are some of the industries which directly or indirectly depend on agriculture and allied sector. In addition to these agro-industries, the State also has various other industries, including thermal power plants, iron & steel industries, cement industry, heavy electrical, electronics & electric goods, chemical & petro-chemical products, stone crashing & sand mining, glassware, foundry, brassware, and lock making units. These industries are spread across the state, however, there are some industrial clusters famous for specific industries e.g., Bhadohi for carpet industry; Agra for foundry and leather products; Moradabad for brassware; Firozabad for glassware; Aligarh for locks; Meerut for sport goods; Kanpur for Textiles and leather goods; Lucknow for chikan works; and Saharanpur for wooden handicrafts. Most of the pollutingd industrial units, such as sugar, pulp& paper, distilleries, chemical fertilizer, leather goods and ternaries, oil refineries, etc., are located onthe banks of river Ganga or its tributaries which release very polluting effluence into the river system.

10.1 Growth Trends in NSDP from Manufacturing and Tertiary Sectors

Figure 29 shows growth trends in the NSDP from manufacturing and tertiary sectors along with the growth in total NSDP of the State since 1950. It is evident from Figure 29 that average annual growth rates in manufacturing and tertiary sectors have increased significantly over the period. In the case of manufacturing, the annual growth rate went up from 3.5% during 1950-1970 to 5% during 1970-80 and further to 9.6% during 1980-90. However, during the ten year period from 1999 to 2008, it has drastically declined to 4.4% per annum. This clearly shows that during the post-economic reform period, manufacturing sector of the State has recorded poor performance vis-à-vis tertiary sector. Annual growth in the tertiary sector has increased from 2.8% during 1950-70 to 3.6% during 1970-80, 6.4% during 1980-90, and further to 9.5% during 1999-2008. Annual growth rate in NSDP (state income) has also gradually increased from a meager 2.2% during 1950-70 to 3.0% during 1970-80, 5.0% during 1980-90 and further to 7.7% during 1999-2008. It is significant to note that up to 1990 manufacturing sector led the growth in the State income, while during the last one decade it was the tertiary sector which led the growth.

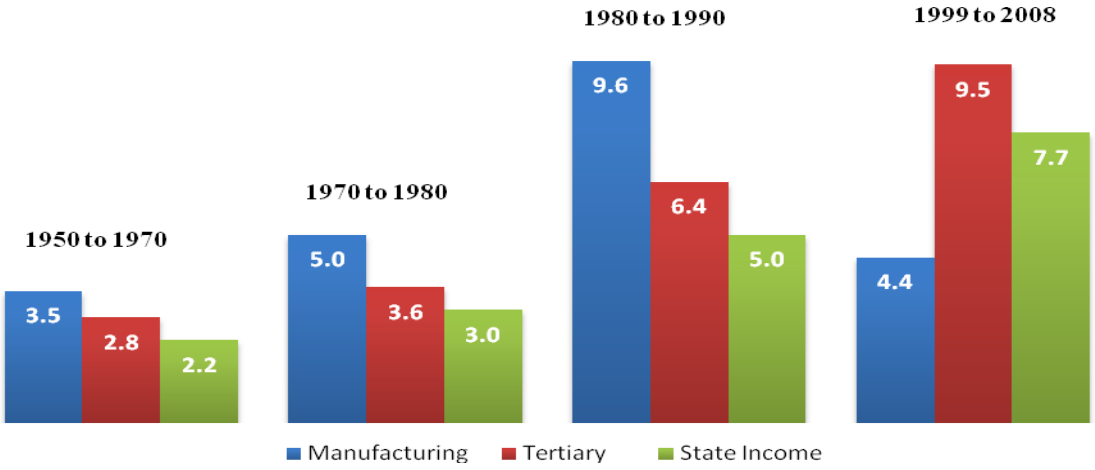


Figure 29: Average Annual Growth Rate (NSDP): Uttar Pradesh

10.2 Trends in Number of Industries, FC, Employment, Output and NVA

This section is based on the data collected from the Annual Survey of Industries (ASI), factory sector. The Growth of the industries has been analysed in terms of number of factories, fixed capital, value of output, employment, etc. The data have been collected for four time points, viz., 1980-81, 1990-91, 2000-01 and 2008-09. As shownin Table 14, number of factories in the State has increased from 7151 in 1980-81 to 10427 in 1990-91 and then decreased to 9635 in 2000-01. Thereafter, the number again went up to 10935 in 2008-09. Keeping in view the size of the State in terms of population, number of factories in the State appears to be relatively less. For instance in 2008-09, the State shares only about 7 percent of total factories of the country. Its percentage share in the total fixed capital (FC) invested in industries of India has significantly declined from 10.35 in 1980-81 to 8.70 in 2000-01 and further to 5.94 in 2008-09. State's shares in total number of employees and total number of workers have also declined over the period but relatively at a slower pace than the percentage share in the fixed capital. Similarly, the State's shares in India's gross output and NVA have also declined since 1990-91. Thus, during the last two decades, performance of industries (ASI factory sector) in the State has deteriorated vis-à-vis country as a whole. This implies that level of industrialization in some other states grew faster than Uttar Pradesh.

The study also estimated per factory number of workers, per worker FC, per factory FC, ratio of NVA to FC and per worker NVA. Per factory number of workers varies from 42 in 2000-01 to 86 in 1980-81 in Uttar Pradesh and from 47 in 2000-01 to 63 in 1980-81 at the all-India level. Per worker FC has been found to be slightly higher in the industries of Uttar Pradesh than the all-India level, except for the year 2008-09. NVA/FC is found to be higher in industries at the all-India level than the industries located in the State during all the years. Similar pattern is also observed in the case of NVA per worker. Thus, NVA per worker as well as per unit of FC are observed to be higher at the national level than the State of Uttar Pradesh.

Table 14: Trends in capital, employment, output, and NVA in Industries (factory sector) in Uttar Pradesh and India

Items	1980-81		1990-91		2000-01		2008-09	
	India	UP	India	UP	India	UP	India	UP
No. of factories	96502	7151 -7.41	110179	10417 -9.45	131268	9635 -7.34	155321	10935 -7.04
Fixed capital (In Rs. Crore)	29912	3096 -10.35	133648	14691 -10.99	399604	34775 -8.7	1055966	62677 -5.94
No of Employees (in 1000)	7744.72	770.63 -9.95	8162.5	789.01 -9.67	7917.81	535.74 -6.77	11252.79	738.64 -6.56
No. of Workers (in 1000)	6066.04	613.6 -10.12	6307.14	619.86 -9.83	6135.24	401.68 -6.55	8776.75	574.87 -6.55
Gross Output (Rs. Crore)	61308	3777 -6.16	270564	26368 -9.75	926902	64854 -7	3272798	200463 -6.13
NVA (Rs.crore)	12154	749 -6.16	51515	4625 -8.98	143621	9577 -6.67	527765	24139 -4.57
Workers/factory	63	86	57	60	47	42	57	53
FC/worker (Rs. lakhs)	0.49	0.5	2.12	2.37	6.51	8.66	12.03	10.9
FC/factory (Rs.crore)	0.31	0.43	1.21	1.41	3.04	3.61	6.8	5.73
NVA/FC	0.41	0.24	0.39	0.31	0.36	0.28	0.5	0.39
NVA/worker (Rs lakhs)	0.2	0.12	0.82	0.75	2.34	2.38	6.01	4.2

Note: Figures in parentheses are percentage share in India's total

Source: Compiled from ASI data

10.3 Regional Pattern of Industrialization

Figure 30 shows across UP region-wise number of industrial area per lakh population. Since the five regions of the State are different in their sizes the number of industrial areas has been standardized by dividing twith population. As is obvious from Figure 30, the number of industrial areas per lakh population has marginally increased from 0.12 in 2000-01 to 0.13 in 2009-10 in NUGP and from 0.05 to 0.07 in SUGP. It has remained same in CR and declined in SR and ER. Overall, the number of industrial areas per lakh population has marginally declined from 0.08 in 2000-01 to 0.07 in 2009-10 in the State. Thus, number of industrial areas in the upper Ganga plains has increased during the last one decade, while there has not been any increase in the other regions of the State.

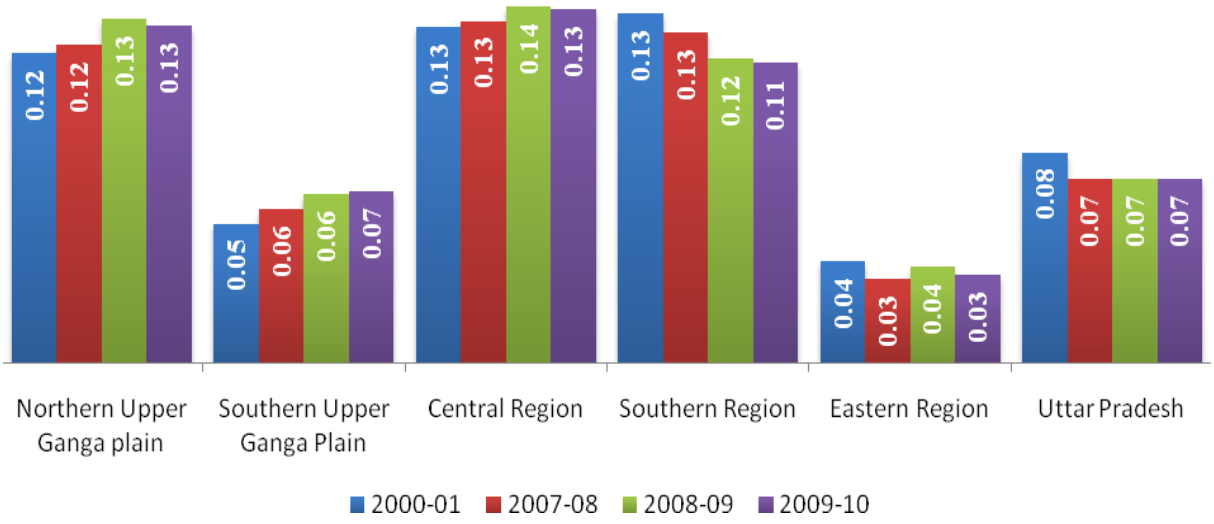
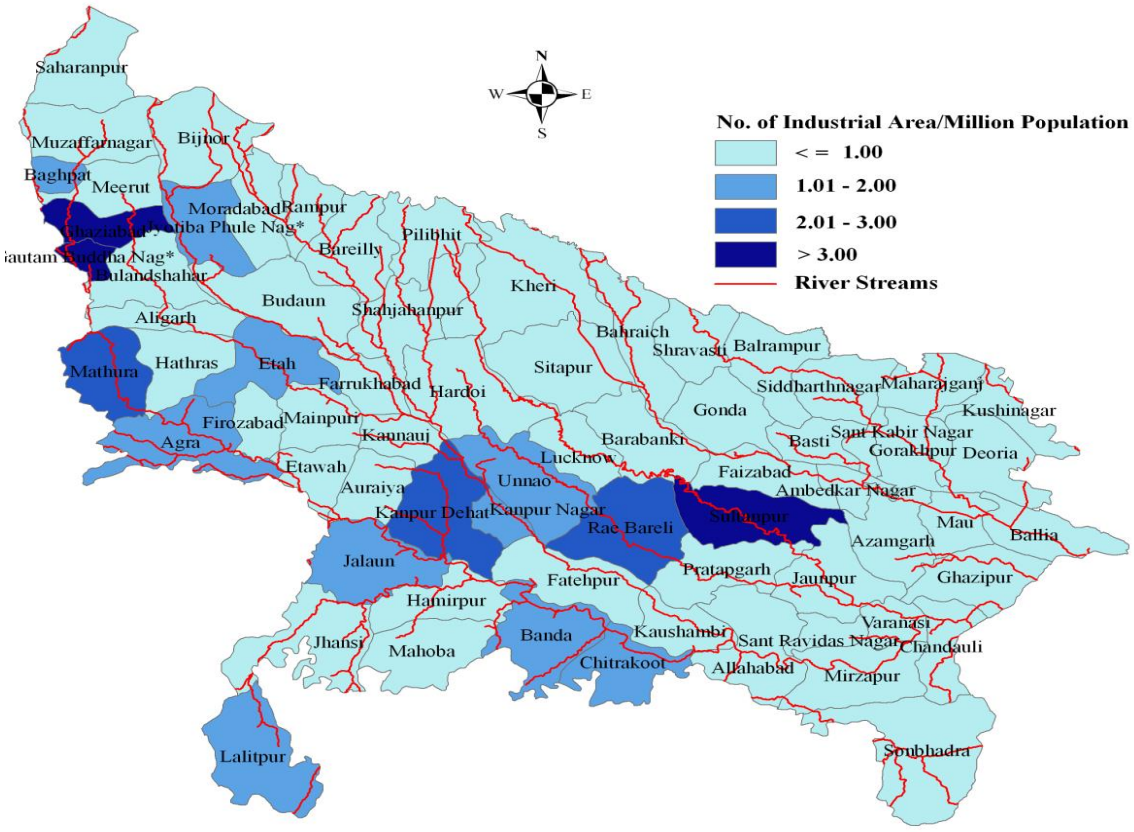


Figure 30: **No. of Industrial areas per lakh population across various regions of Uttar Pradesh**

District-wise number of industrial areas per lakh population is shown in Map-3. It is noted that in most of the districts of the State, the number of industrial areas per lakh population is less than or equal to one. Nine districts, namely, Baghpat, Moradabad, Etah, Agra, Lalitpur, Banda, Chitrakoot, Unnao, and Kanpur Nagar have number of industrial areas in the range of 1.01-2.0 per lakh population. Three districts, viz. Mathura, Kanpur Dehat and Rae Bareli have the number in the range of 2.01-3.0. Only Ghaziabad, GautamButh Nagar and Sultanpur have the number more than 3.0. Thus, in terms of number of industrial areas, there exists a wide disparity across the state.

UP has also witnessed rapid industrialization in the recent past, particularly after the initiation of economic liberalization policies in the country. As of 2002, there were 1498 heavy industrial units and 430,618 small industrial units employing 4,96,490 and 16,49,181 persons respectively. Regional distribution of heavy and small scale industries in the state (2002, 2005, and 2007) is presented in figure 31 which shows that the number of heavy industries inSUGP, SR and ER remained same, while it has increased significantlyin NUGP during the same period. NUGP has highest number of heavy industries which is equal to all other regions of the state. SUGP and ER have more than 27 percent of the state SSI whereas NUGP and CR occupy 24 percent and 15 percent of state SSI respectively and SR lags behind with just 5 percent share.



Map 3: No. of Industrial areas per lakh population in Uttar Pradesh, 2009-10

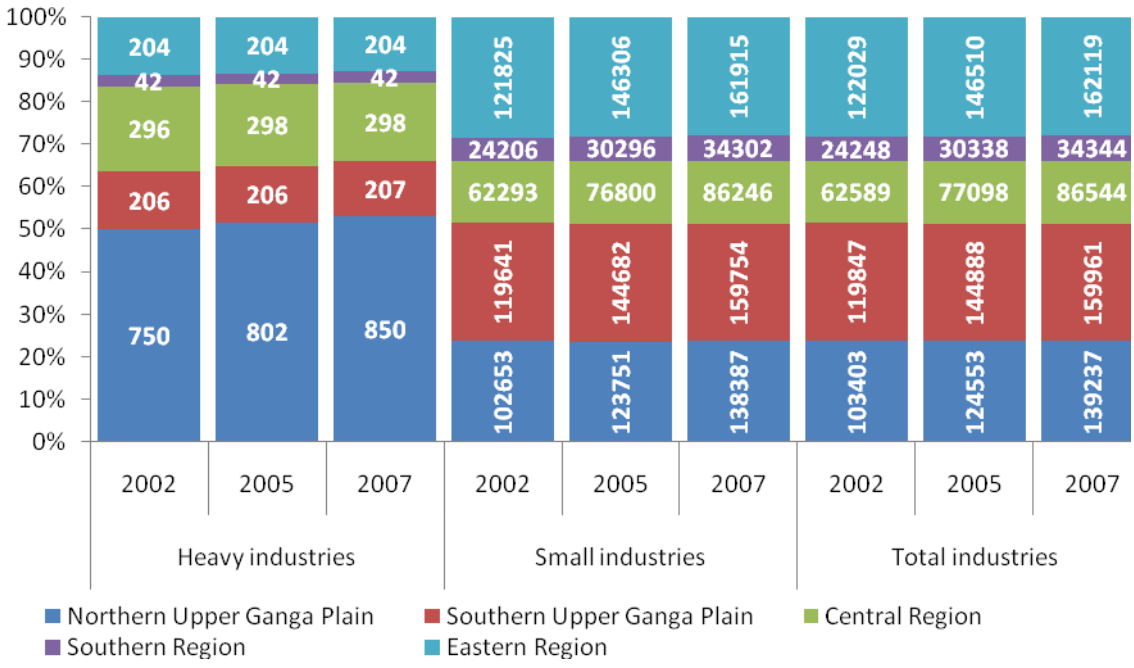


Figure 31: Number of Heavy and small Industries across various regions of Uttar Pradesh

As far as the number of SSI units per lakh population is concerned, Figure 32 shows that at the State level it remained more or less same between 2000-01 and 2009-10. However, there has

been variation across regions. The number of SSI units in NUGP, SUGP, SR and ER has increased, while it has declined in the CR during the same period.

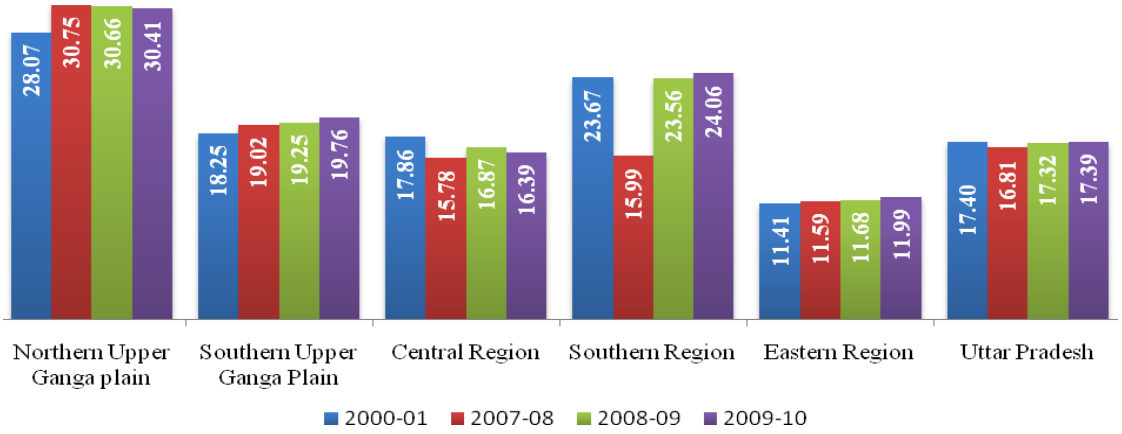
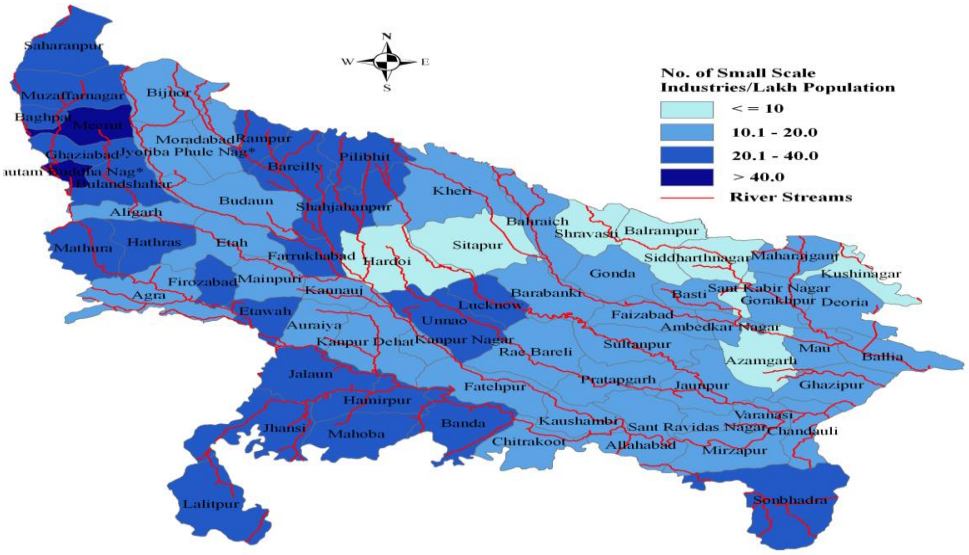


Figure 32: No. of small scale industries per lakh population across various regions of Uttar Pradesh

Map 4 shows the district-wise intensity of small scale industrial activity measured in terms of number of SSI units per lakh population in 2009-10. It shows that only 7 districts of the State have less than or equal to 10 SSI units per lakh population . A majority of districts score in the range of 10.01-20.0, most of which are found in the ER. About 30% districts of the State score in the range of 20.01-30. Only in two districts namely Meerut and GautamBudh Nagar, it is more than 40 per lakh population. Thus, there exists not only the inter-regional variation in the concentration of SSI units but also intra-regional variation which can be attributed to resource availability, connectivity, infrastructure, etc.



Map 4: No. of small scale industries per lakh population in Uttar Pradesh, 2009-10

Figure 33 shows region-wise number of working factories per lakh population. It is significant to note that during 2000-01 to 2006-07, the number of factories per lakh population has declined in almost all the regions. At the State level, the number has declined from 6.7 in 2000-01 to 6.09 in 2006-07. Figure33 demonstrates that the maximum concentration of factories is in the Upper Ganga Plains (both Northern and Southern) followed by CR. In SR and ER, the number of factories per lakh population is less than 2.0; while in NUGP it was as high as 27.76 in 2000-01. These results again testify to the fact that the level of industrialization is much higher in the NUGP than that in other regions of the state.

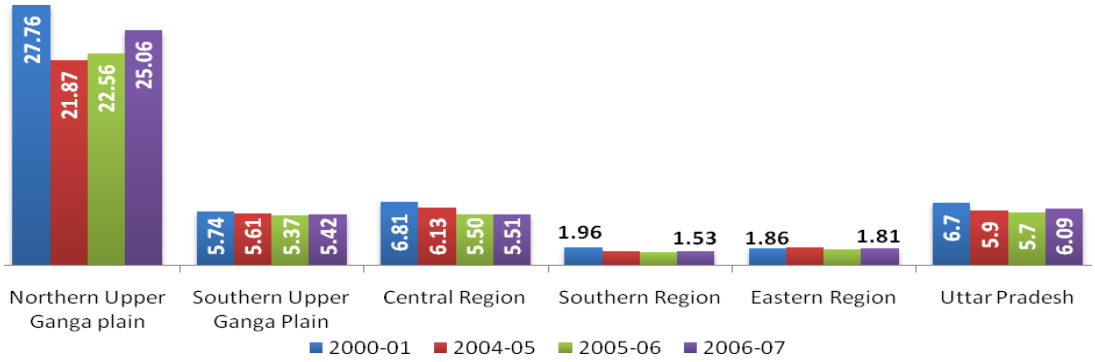


Figure 33: No. of working factories per lakh population across various regions of Uttar Pradesh

Observing the regional distribution of number of factories in the State, it can be seen that in 2000-01NUGP constituted highest share (47%) in the total registered factories of the State, followed by SUGP (21%). Thus, Upper Ganga Plains (Western Uttar Pradesh) is home to68 percent of total number of factories in 2000-01, while remaining three regions (CR, SR and ER) account for only 32% (Figure 34). In 2006-07, the percentage share of Upper Ganga Plains has further increased to 71%, while the corresponding share of remaining three regions has declined to 29% indicating that the highest concentration of industries in the State is in the NUGP, followed by SUGP and CR. The ER which has population and area almost equal to Upper Ganga plains (Northern plus Southern), shared only 11% of total factories in the State.

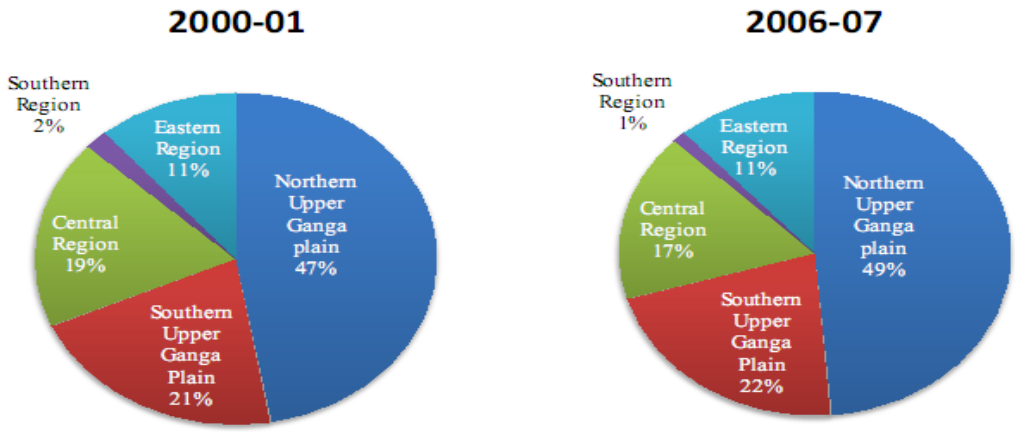
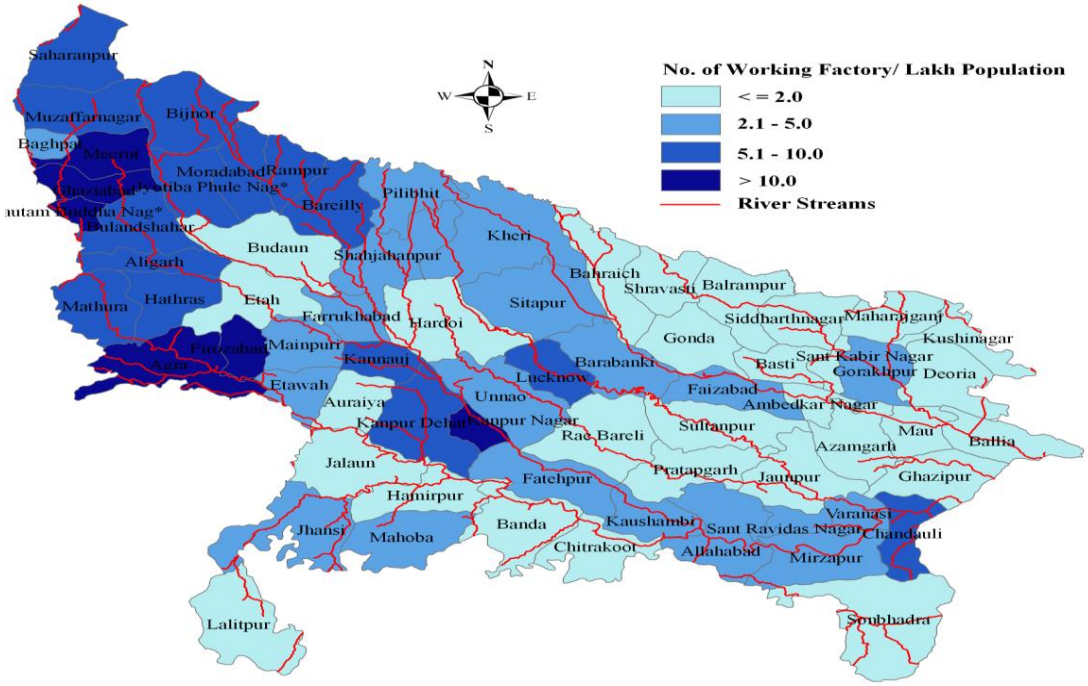


Figure 34: Percentage distribution of registered factories across various regions of Uttar Pradesh

Map 6 shows district-wise number of registered factories per lakh population. It is noted that most of the districts of ER and SR score 2, whereas most of the districts of NUGP and SUGP score more than 10.0. A perusal of the Map reveals that there exists a significant disparity in the level of industrialization across the state. For instance, Meerut, Ghaziabad, GautamBudh Nagar, Firozabad, Agra, and Kanpur Nagar have more than 10 factories per lakh population, while most of the districts located in ER and SR have less than or equal to 2 factories per lakh population.



Map 5: No. of working factories per lakh population, 2006-07

10.4. Value Added by Industries

In this section, region-wise per capita gross value added (GVA) in the industrial sector has been analysed. As noted from Figure 35 the per capita GVA has increased in all the regions during 2000-01 to 2006-07. At the State level, it has increased from Rs.3743 in 2000-01 to Rs.7653 in 2006-07. It is relevant to note that the per capita GVA has been highest in the NUGP. It is distantly followed by CR and SUGP while SR stands the lowest.

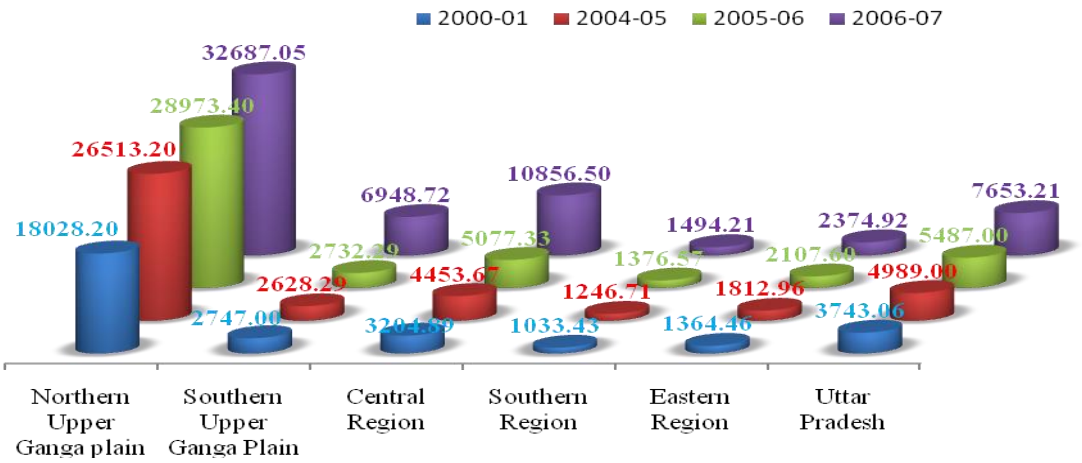
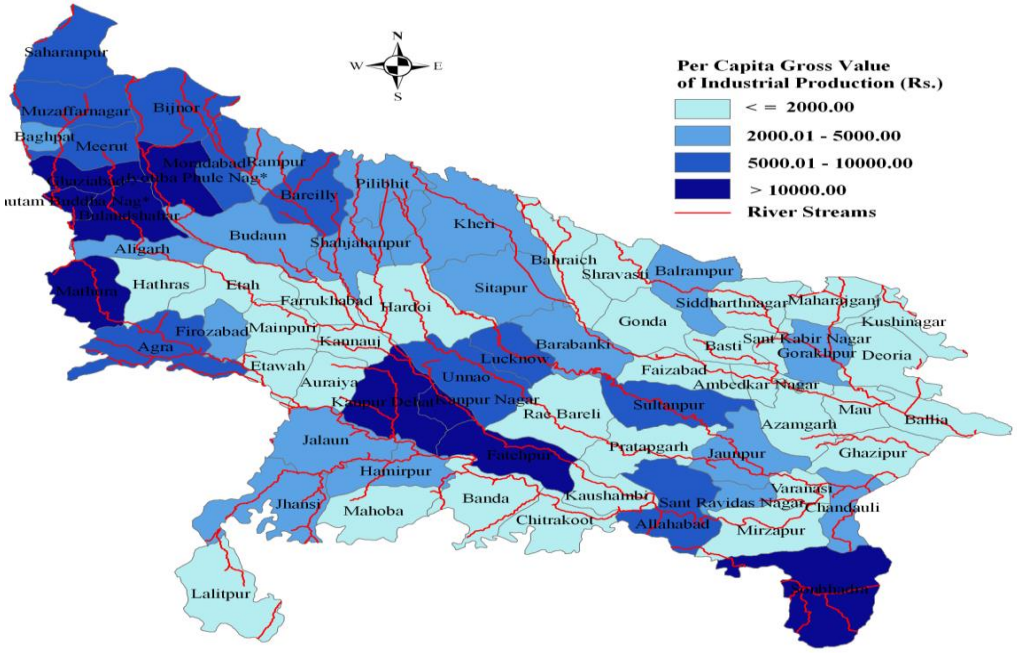


Figure 35: Per capita gross value of Industrial Production across various regions of Uttar Pradesh

Map 6 exhibits district-wise per capita GVA in the industrial secor in 2006-07 and it is found that there is wide disparity across districts. Most of the districts of ER, SR (and some districts of SUGP) have shown value addition by industries of the order of or less than Rs.2000per capita, while most of the districts of SUGP have recorded value addition in the range of Rs. 5001-10000per capita . On the other hand highly industrialized districts such as Ghaziabad, GautamBudh Nagar, Bulandshahr, Moradabad, Mathura, Kanpur, Fatehpur and Sonbhadra have reported value addition more than Rs.10,000per capita.



Map 6: Per Capita Gross Value of Industrial Production in Uttar Pradesh, 2006-07

If we measure the region-wise per worker NVA in registered factories, the results are found much different from that received in the case of per capita GVA. At the State level, per worker NVA has declined from Rs.4,13,410in 2000-01 to Rs. 3,61380 in 2006-07. Out of the five regions, in three

regions, viz., NUGP, CR and SR, per worker NVA in registered factories has declined in 2006-07 over 2000-01, while in SUGP and ER, it has increased. Figure 36 shows that per worker NVA varies significantly across regions and over the years.

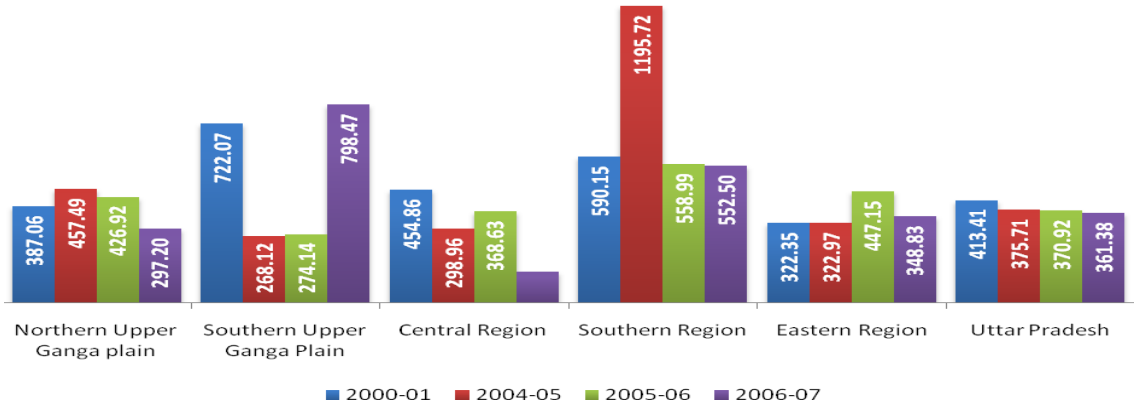
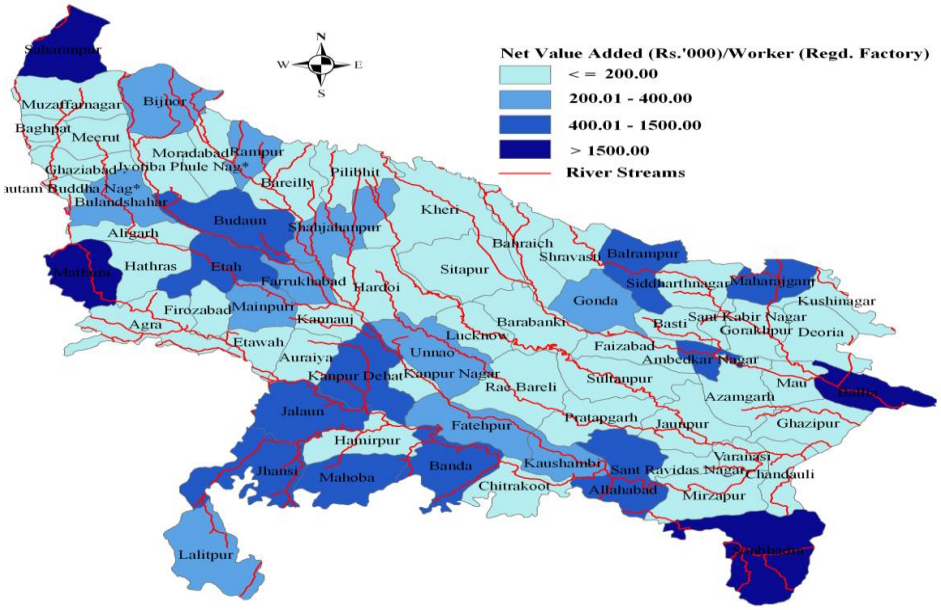


Figure 36: Net value added per worker in registered factories (000 Rs) across various regions of Uttar Pradesh

Map 7 presents district-wise per worker NVA in registered factories. It is found that about 60% districts of the State achieved per worker NVA less than or equal to Rs.2,00,000. About one-sixth districts of the State achieved per worker NVA in the range of Rs.200010 to 4,00,000 while in another one-sixth of the districts in the range of Rs.4,00,010 to 15,00,000. Interestingly in in four highly industrialized districts, namely, Saharanpur, Mathura, Sonbhadra and Balia, per worker NVA was recorded more than Rs.15,00,000. Evidently across districts thereis significant variation in per worker NVA in registered factories.



Map 7: Net value added per worker in registered factories (000 Rs) in Uttar Pradesh, 2006-07

Figure 37 presents information on region-wise investment (Rs. in cores) in heavy and small scale industries in Uttar Pradesh. As per this it is noted that during 2002-200775-80 percent of investment in the state is accounted by heavy industries. In this category NUGP attracted one third while SUGP and ER received about a quarter each whereas CR and SR were not so successful. Similar trend is found in SSI investment.

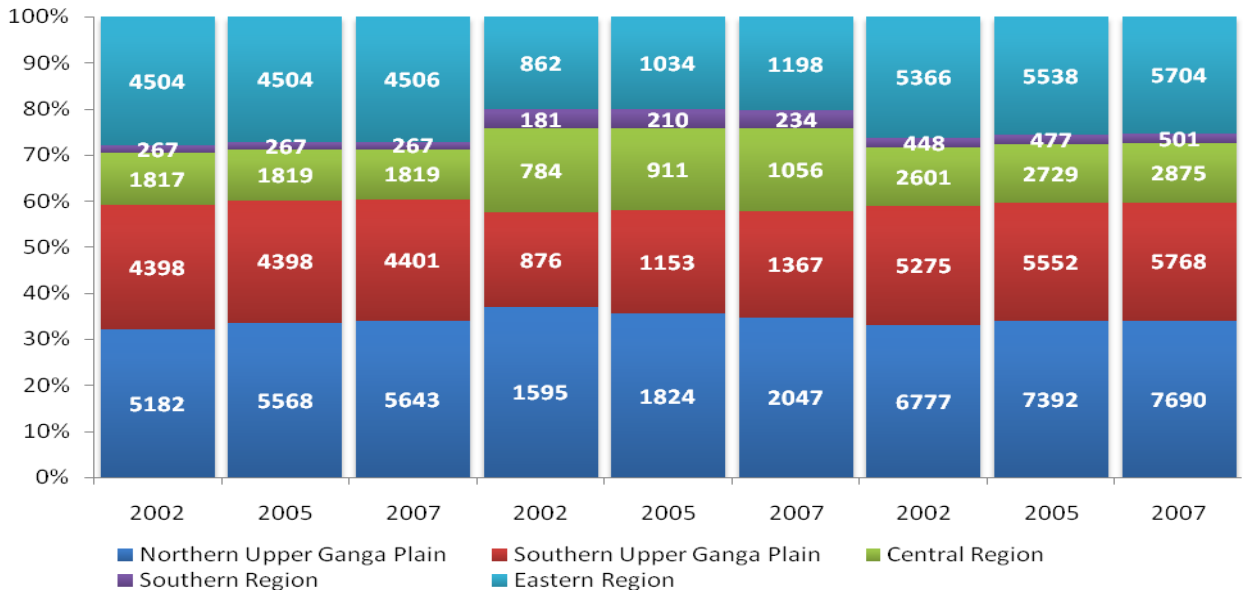


Table 37: Investment (Rs. in Crore) in Heavy and Small Scale Industries in Uttar Pradesh

10.5. Regional Trends in Employment Generation in the Industries

This section deals with regional trends in employment generation in the industrial sectorof the State. Figure 38 shows number of employees in registered factories per lakh population. At the State level, number of employees per lakh population has increased from 228 in 2000-01 to 373 in 2006-07, a net increase of 24 per lakh population per year in these six years. A region-wise comparison of employment generation in factories reveals that NUGP has the highest number of employees per lakh population. It is distantly followed by SUGP and CR. SR has the lowest number of employees per lakh population, followed by ER. A perusal of Figure 38 reveals that there has been tremendous rise in the number of employees in the NUGP. The number has increased from 861.6 to 1745.9 per lakh population over six years period from 2000-01 to 2006-07, a net increase of 147 per lakh population per year. Evidently NUGP outperformed other regions. Though number of employees per lakh population has also increased in other regions, the rate of increase was much lower than that observed in NUGP. This implies that concentration of industries is highest in NUGP. This also correlates with high discharge of industrial effluent and sewage from urban population into the river system.

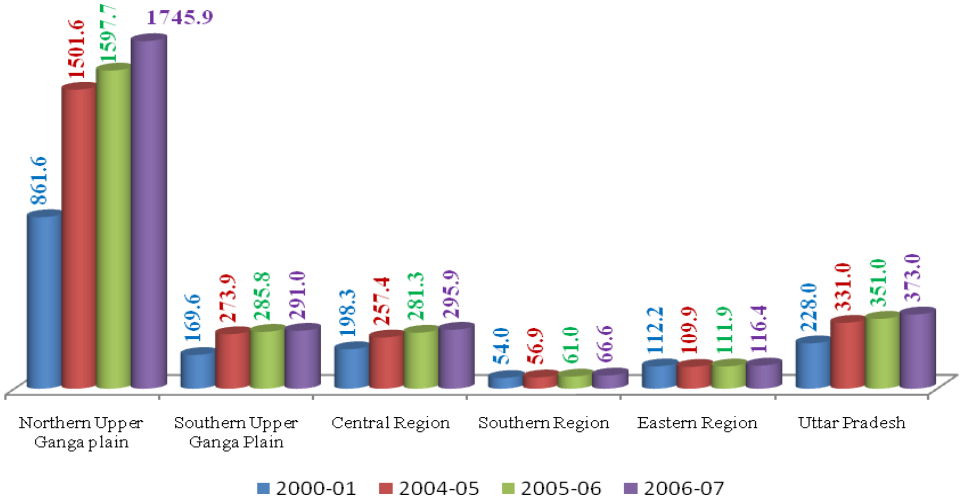
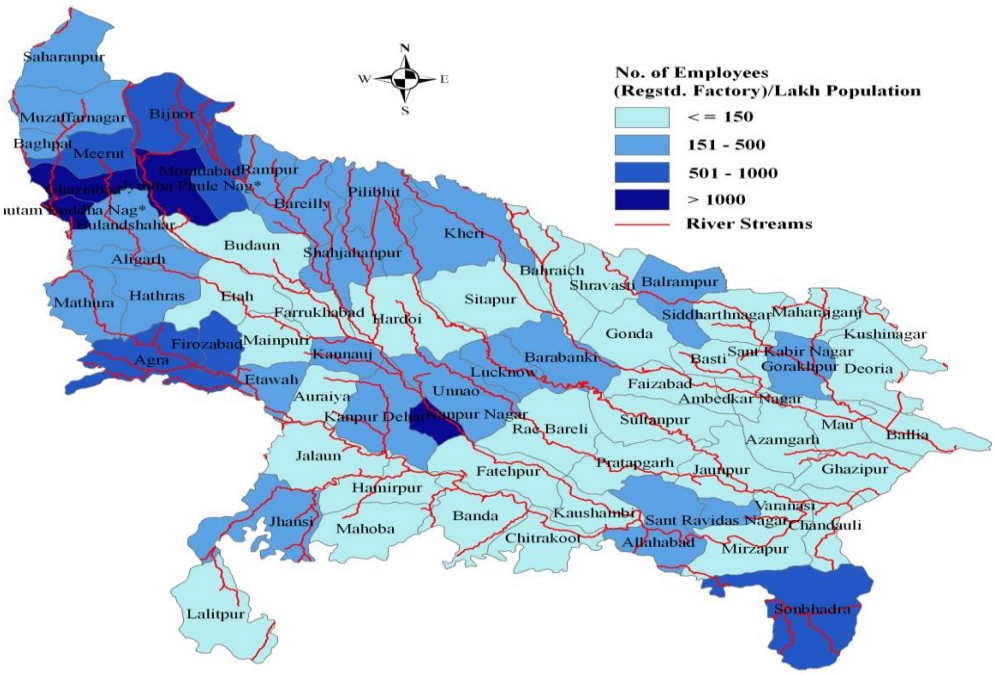


Figure 38: Number of employees in registered factories per lakh of population across various regions of Uttar Pradesh

Inter-district variation in number of employees is shown in Map 8 which brings to the fore that about 50% districts of the State have less than or equal to 150 employees per lakh population . Most of these districts are in ER, SR and CR. For another one-third districts this is reported in the range of 151-500 employees per lakh population. Except for Sonbhadra in ER, no other district of ER, CR and SR has 501-1000employees per lakh population, while registered factories in several districts of NUGP and SUGP have number of employees in that range. Four districts, namely, Ghaziabad, GautamBudh Nagar, Moradabad and Kanpur Nagar have more than 1000 employees per lakh population. These findings again bear witness that districts located in North Upper Ganga Plain have highest level of industrialization among all regions of the State



Map 8: Number of employees in registered factories per lakh of population in Uttar Pradesh, 2006-07

In order to understand variation in average size of registered factories across regions, number of workers per registered factory has been estimated. Figure 39 shows that average size of factory in terms of employment has increased in all the regions in 2006-07 over 2000-01. At the State level, the number of workers has increased from 25.7 in 2000-01 to 47.58 in 2006-07. Across regions it is found that it was highest in ER, followed by NUGP. In the ER, the number has increased from 68.37 in 2000-01 to 90.33 in 2006-07. Similarly, in the case of NUGP it has increased from 47.46 in 2000-01 to 62.65 in 2006-01. It can be inferred from the perusal of Figure 33 that although the level of industrialization in the ER is lowest among all the regions, average size of factory is largest, whereas in NUGP the level of industrialization is highest but average size of factory is lower than that in the ER.

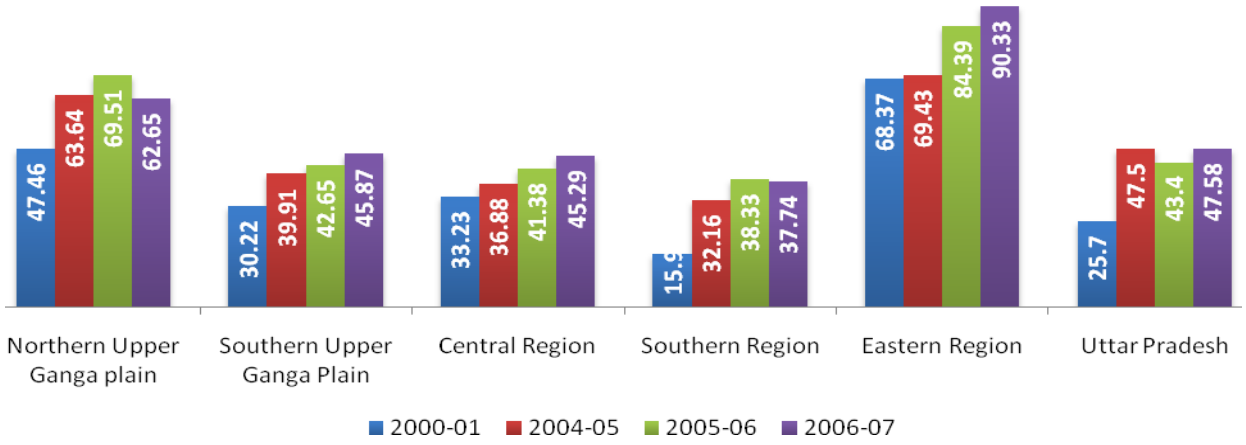


Figure 39: Average workers per registered working factory across various regions of Uttar Pradesh.

A region-wise comparison of employment generation in heavy industries is presented in Figure 40 which reveals that NUGP has the highest proportion of employees. It is distantly followed by CR and ER. SR has the lowest percentage of employees. In SSI sector, SUGP has the highest proportion of employees, followed by NUGP and ER respectively and SR has the lowest percentage of employees. As far as growth of employment opportunities is concerned (heavy and small industries), NUGP region outperformed other regions.

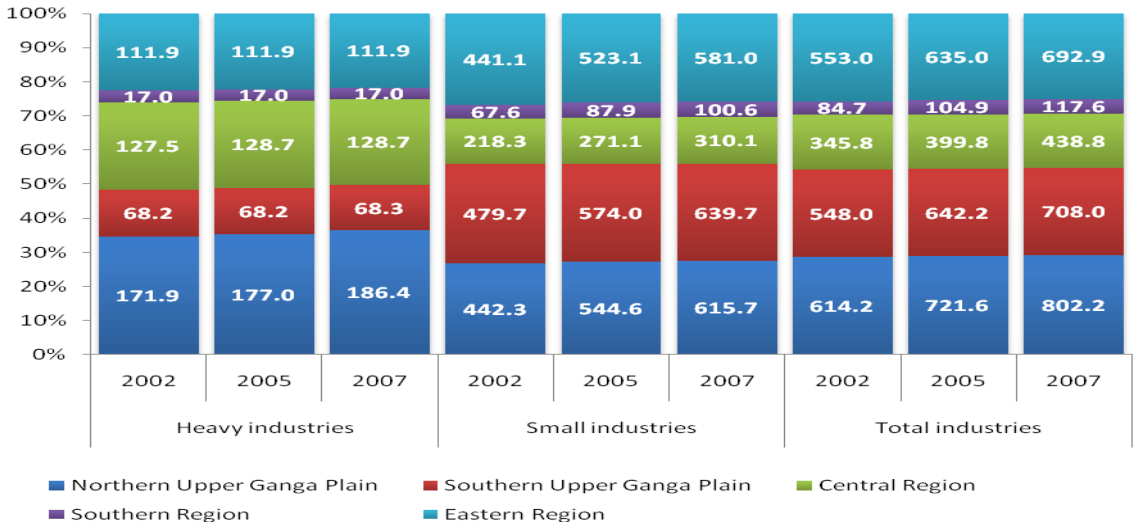


Figure 40: Region-wise Persons Employed in Heavy and Small Scale Industries in Uttar Pradesh

11.0. Sources of Pollution in the River Ganga

Urbanization, industrialization and chemicalization of agriculture are the mainsources of river pollution These sources can be classified as point and non-point sources. Point sources include domestic sewage and industrial effluent discharges, while non-point sources comprise, among others, run off from agriculture field scarrying pesticides and chemical fertilizer. Heavy doses of pesticides and chemical fertilizers used in agriculture not only pollute groundwater but also lead to severe pollution of rivers and other surface water bodies. In this section, only point sources of pollution are discussed. As stated earlier, the State of Uttar Pradesh has more than 700 cities and towns with approximately 2 crores (62%)of urban population in Class I cities;35 lakhs (10%) in Class II cities;50 lakhs (15%) in Class-III citiesand 46 lakhs (13%) in smaller towns from Class- IV to VI in 2001, generating about4845MLD sewage while sewage treatment facility is restricted to mainly new cities and that too is quite inadequate. Moreover, sewage volumes in some cities and towns of religious and cultural importance increases significantly during festivals, cultural and religious congregations, which is not property treated and consequently pollute the Ganga. It is estimated that municipal sewage contributes about 80% by volume of the total waste water disposed of into the Ganga and the industries contribute about 15%. Over the period, urban population has increased substantially, while the municipal infrastructure for sewage disposal has remained inadequate. In this section, only two major sources of pollution of river Ganga, namely, urban domestic sewage and industrial effluent have been discussed .

11.1 Urban Sewage

As stated earlier, most of the cities in the State are located onthe bank of river Ganga or its tributaries. Except for a few Class I cities, in most of the cases, sewage treatments plants have not

yet been installed by the urban local bodies. Even in those cities where sewage treatment facilities are available, the facilities are inadequate and ill-equipped in treating the ever increasing wastewater flows. Table 15 presents details of sewage generated in some cities and available treatment capacity of STPs.

Table 15: Waste water Generation and Treatment in Uttar Pradesh

S. No.	City/Town	Population 2001	Total Sewage generation (in MLD)	Treatment Capacity (in MLD)	Percentage covered
Class I					
1	Kanpur	3114530	339.3	171.1	50
2	Varanasi	1353920	187.1	141	75
3	Allahabad	1218070	208	89	43
4	Farrukhabad-cum-Fatehgarh	280290	30.5	8.3	27
5	Mirzapur-Vindhyachal	252470	27.5	14	51
6	Unnao	178250	23.9	19.4	81
7	Ballia	125740	18	-	0
8	Dehradun	550800	76.1	-	0
9	Hardwar	215260	39.6	18	45
Class II					
10	Bijnor	79368	7.6	8.1	100
11	Mughalsarai	88386	16	-	0
12	Ghazipur	95243	10.7	-	0
13	Kannauj	71530	7	-	0
14	Deoband	81706	7.8	-	0
15	Gangaghat	70817	6.8	-	0
16	Rishikesh	59671	10.7	6.3	59
17	Roorkee	97064	11	-	0

Source: TERI (2011)

It is noted that except for Noida which has 100 treatment capacity, the percentage of sewage treatment is quite low in all other cities andtowns. Allahabad and Varanasi, both being important centres of pilgrimage, have grossly inadequate installed capacity – around 30% of its present sewage flows.

Figure 41 shows that about 36% of Class-I and 70% of Class-II cities of undivided Uttar Pradesh are located on the bank of River Ganga. Further, 27% class-I and 27% class-II cities are located on the bank of tributaries of the river Ganga. Thus, about 63% Class-I cities and 97% of Class-II cities of the state are in one way or another dischargetheir wastewater into the river system leading ultimately to tha Gang.

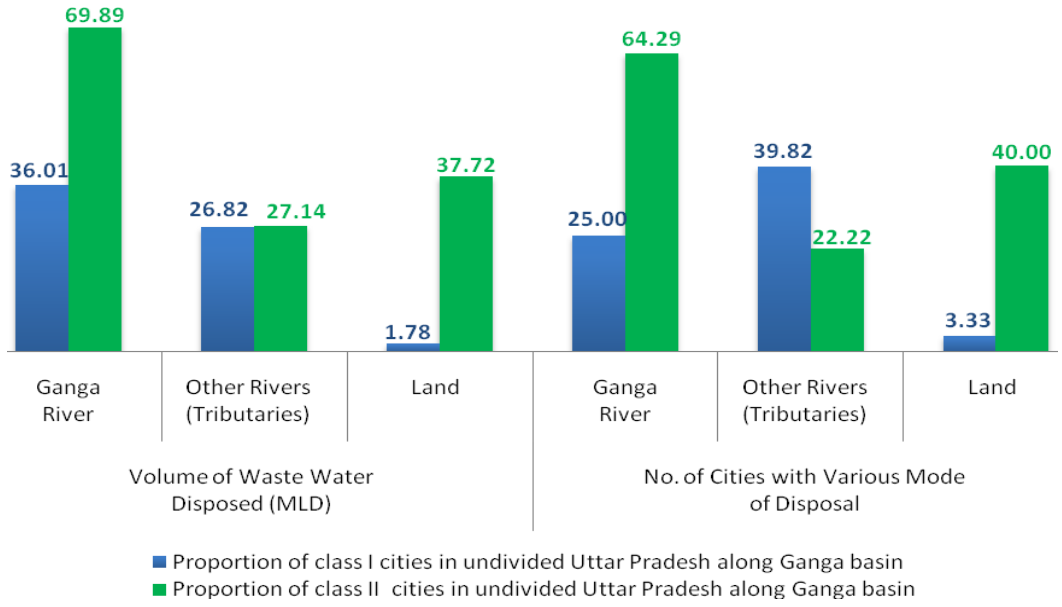


Figure 41: Percentage of Municipal Wastewater Disposal and Mode of Disposal in the Ganga Basin (Uttar Pradesh and Uttarakhand)

Figure 42 brings out the serious shortfall in sewage treatment capacity in Class-I cities of UP. This situation needs to be corrected on priority if the quality of the holy rive has to be restored in a reasonable time frame.

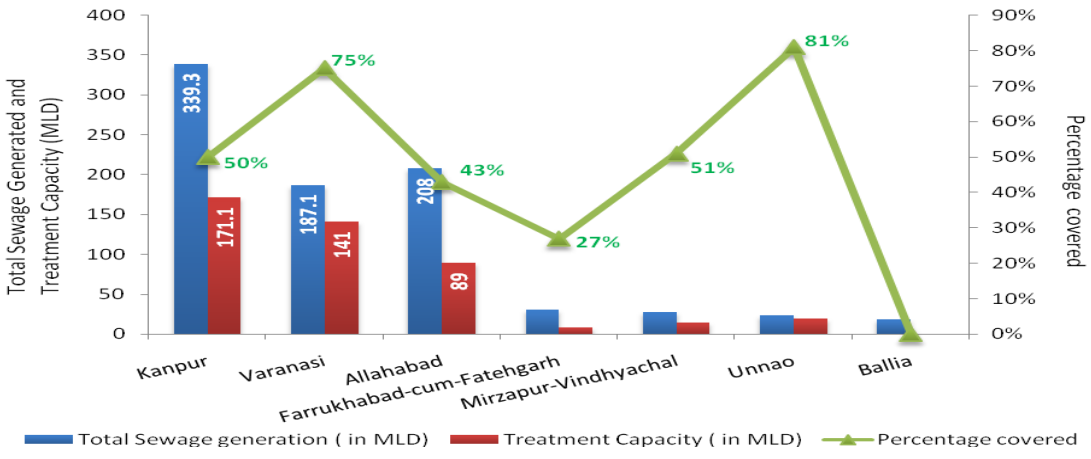


Figure 42: Wastewater Generation and Treatment Capacity for Class I cities discharging wastewater into the Ganga River

Further, the most common observation about the installed sewage treatment plant is that most of them either don't work or underperform. When it comes to Class II cities the scenario is far worse . In this category, as shown in Figure 43except for Bijnorewhere installed treatment capacity is adequate for the time being, all other cities do not have any treatment plant at all, while sewage volumes are fairly large. .

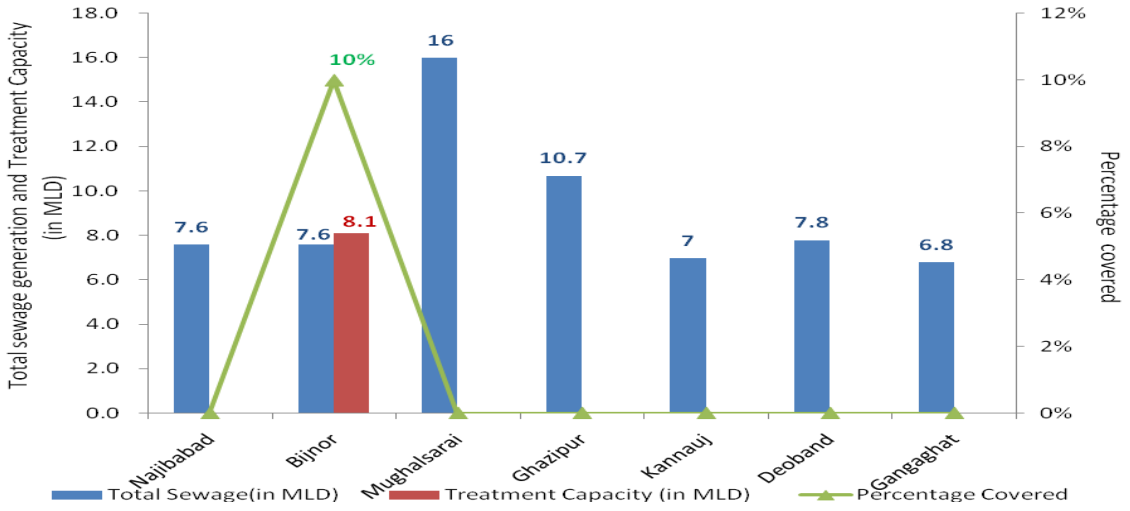


Figure 43: Wastewater Generation and Treatment Capacity for Class II cities discharging wastewater into the Ganga River

Figure 44 presents scenario of solid waste quantity and generation rate in the backdrop of population density in Class I cities of Allahabad, Kanpur and Varanasi. In relation to the waste loads, these cities do not have the required capacity for collection, transport, treatment and safe disposal. As a result, a large quantity of MSW is eventually disposed of in unsafe manner, leading to pollution in the river system either directly or through release of leachate.

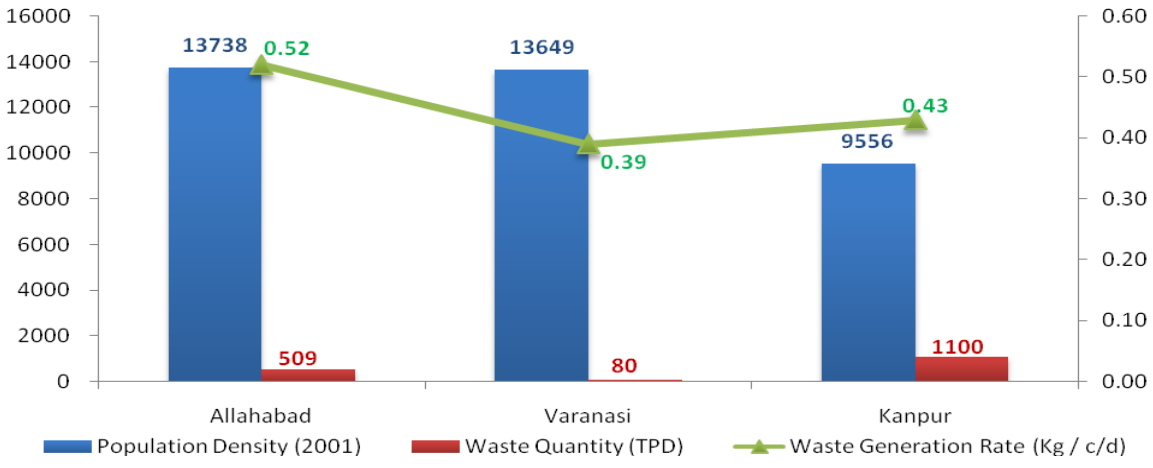


Figure 44: Waste Generation and Status of Implementation of MSW (Management & Handling) Rules, 2000 in Uttar Pradesh Cities along River Ganga

11.2. Industrial Effluents

Table 16 shows list of polluting industries in some important districts in the state. Most of these industries are located onthe bank of river Ganga or its tributaries. Treated or untreated effluents of these industries are released into the river, thereby increasing pollution load and adversely affecting the carrying capacity of river system.

Table 16: List of type of Industries contributing to pollution in Uttar Pradesh

District	TypeofIndustries
Lucknow	Distillery, Brewery, Iron & Steel including foundries, Rolling & Pickling, Casting, Pesticides, Chemicals, Asbestos, Cement, Electronics, Silicates, Timber
Varanasi	Food Products, Tobacco and Tobacco Products, Silk, Textile Products, Wood Products, Leather Products, Rubber, Petrochemical Products, Non metallic and Mineral, Basic Metal & Alloy Industries, Metal Products & parts, Machinery & Machine Tools.
Kanpur	Cotton Textiles, Leather Industry, Jute Mills, Woollen Mills, Edible Oil Industries, Chemicals and Chemical Products, Basic Ferrous Industries, Manufacture of Non-Electrical Machinery
Ghaziabad	Heavy & Medium Industries, Small Scale Industries, Handicraft, Rural Industries
Agra	Foundry, Glass Industries, Lime Kiln, Silicates, Refractory, Eriquette, Rubber Industries, Leather industries
Jhansi	Thermal Power Plant, Heavy Electricals, Fertilizers, mostly stone based industries, Handicraft

Source: District Industrial Development Centres,.

Table 17 shows that number of most polluting industries in the State has increased from 207 in 2000 to 390 in 2010. As far asnumber of industries that comply with pollution control norms it is noted that there is a an increasefrom 198 in 2000 to 281 in 2010. Evidently 20% industries still not comply and which must be contributing to the pollutionload on the river system.

Table 17: Pollution Control in 17 Categories of Highly Polluted Industries in Uttar Pradesh and India

Year	Uttar Pradesh				India			
	Total No of Units	closed	complying	defaulter	Total No of Units	closed	complying	defaulter
2000	207	14	198	5	1551	114	1326	53
2010	390	38	281	71	2608	339	1924	345

Source: Annual Report of MOEF

Figure 45 shows distribution of industrial hazardous wastes among districts along river Ganga. In the case of land disposable hazardous waste two districtsof Kanpur and Kanpur Dehat alone account for more than 82 percent of the total waste in the state;, while in the case of incinerable hazardous waste, the district of Raebareli alone accounts for 77% of the total waste in the state and Kanpur and Kanpur Dehat come a distant second at around 20%.

Figure 45: Hazardous Waste from Industries in Uttar Pradesh along River Ganga (a)

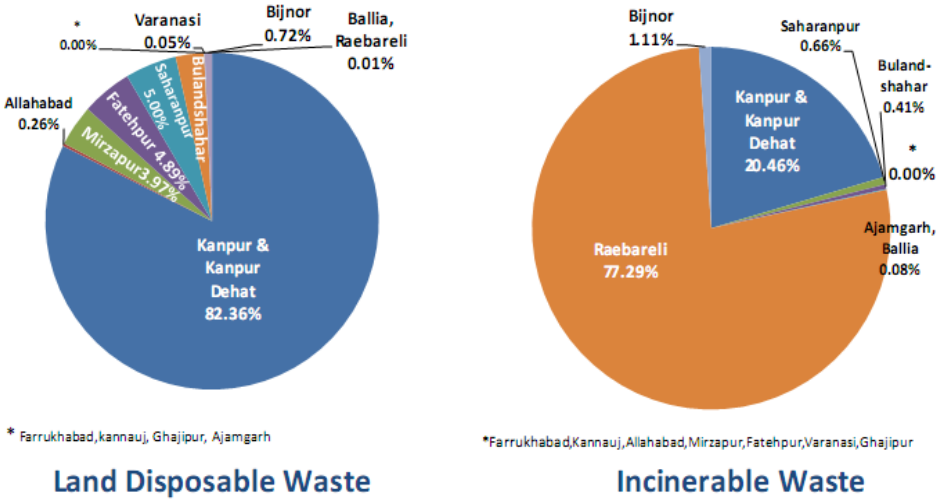


Figure 46 shows share of different cities in recyclable and total wastes of industries. In the case of recycle wastes, Saharanpur constitutes 54% of such wastes. It is followed by Fatehpur (38.73%) and Allahabad (10.57%). In the case of total industrial waste, more than one third is shared by Saharanpur. Fatehpur comprises 29% of total wastes, followed by Kanpur and Kanpur Dehat (21%) and Allahabad (7.66%). The Figure clearly indicates that while the share of Kanpur and Kanpur Dehat in the recyclable industrial waste is almost zero, the non-recyclable waste is quite substantial.

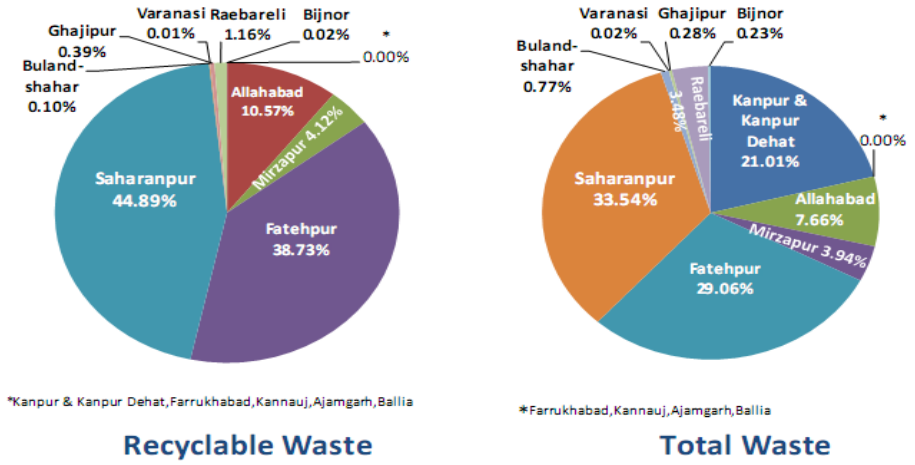


Figure 46: Hazardous Waste from Industries in Uttar Pradesh along River Ganga (b)

Figure 47 shows four kinds of wastes in Uttar Pradesh and the whole Ganga Basin. In the case of land disposable waste, Uttar Pradesh shares about 32% of total waste, while its share in the incinerable waste category is only about 12 %. More than 98 % of recyclable industrial waste in the Ganga Basin is generated only in Uttar Pradesh. This implies that policy focus must be given on making efficient use of recyclable industrial wastes in the state. As far as disposable of incinerable waste is concerned, it is imperative to explore robust technologies such that this category of waste can be safely disposed of without putting more pressure on land resource and without causing any problem of air pollution.

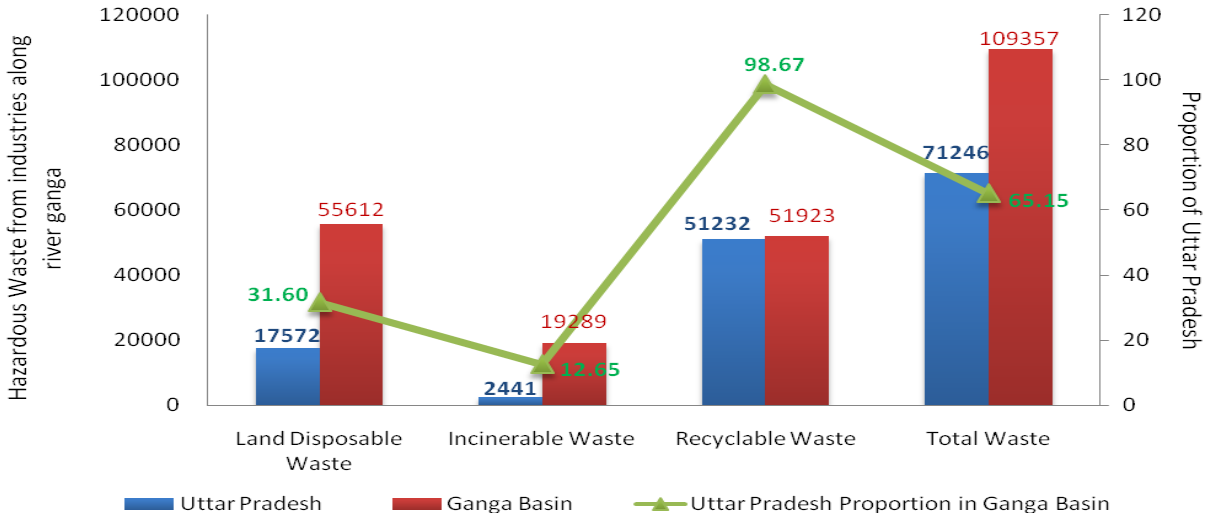


Figure 47: Hazardous Waste from Industries in Uttar Pradesh along River Ganga and Total Ganga Basin

All these statistics clearly indicate that the river has to carry a considerable amount of raw and diluted sewage created and discharged by the urban and industrial centres downstream which severely impair the quality of water affecting human, plants and river ecosystem adversely. The effect becomes far more glaring in view of the fact that a large amount of water stand already withdrawn from the Ganges and its tributaries in the upstream areas that far more limit their capacities, especially downstream, to carry and clean the water through natural process. The effects of disposal of raw sewage into the river system are well documented in the scientific literature and therefore need nofurther emphasis.

12.0. Conclusions and Policy Implications

The above analysis takes stock of urbanization and industrialization pattern in the State of Uttar Pradesh, so as to find out the areas which could be addressed through appropriate interventions. The analysis has been done at the state, region and district levels. From the analysis and interpretation of data, the following conclusions emerge:

- The percentage of urbanization in Uttar Pradesh has been much lower than the national average. Despite low urbanization, the state is characterized by wide variations in the level of urbanization across districts and regions. Relatively higher level of urbanization in districts, such as Meerut, Ghaziabad, Gautam Budh Nagar, Aligarh, Agra, Kanpur, Allahabad, and Varanasi have greater implications for Ganga river. NUGP has the highest percentage of urbanization in the state, followed by SUGP and CR. The Upper Ganga Plains, which constitute 39.2% of total population and 53.4% of total urban population of the State, have the largest number of towns (344 towns) in the State. It implies that the policy focus of pollution reduction in the Ganga river must be more on the Upper Ganga Plains, followed by the Central Region for the reasons given below:
    - Cities located in the Upper Ganga Plains grew faster than the cities of other regions.
    - The growth of Class-I and Class-II is relatively higher in Upper Ganga Plain than the other regions.
- During the last 10 years (2001-2011), number of urban households grew much faster than the total number of households in the State.
- Urbanization has increased faster in NUGP and CR than the other regions.
- About one third of Class-I and two thirdof Class-II cities of Uttar Pradesh are located on the bank of River Ganga. Further, about a quarter of class-I and class-II cities each are located on the bank of tributaries of the river Ganga. A majority of these cities do not have sewage treatment facility and where they exist, typically there are problems of poor performance. The scenario is far worse when it comes to the class II cities, where sewage generation and disposal is quite sizable, the facility almost remain non-existent.
- In selected large cities slum population is almost one third of the total population which has implications of open defecation and quality of environment, river ecosystem and public health.
- The study finds that about 38% rural households and 6.64% urban households in the State in 2011 did not have any sewerage connection . However, the percentage of households having closed drainage system has increased from 26.46% in 2001 to 32.18% in 2011 in urban areas and from 5.29 to 7.23 in rural areas. An increase in the share of closed drainage system in the total indicates some improvement in sewerage system in the State. However, the extent of improvement varies significantly across region.
- Tap water continues to remain the key source of water supply to the urban households in all the regions. Next to tap water is hand pump. Its percentage share in the sources of drinking water has declined in the Upper Ganga Plains and increased in all other regions.

- Average MPCE in urban areas has been much higher than that in the rural areas. Further, an average consumer in urban areas spent about 60% of its total MPCE on non-food items, whereas its counterpart in rural areas spent only about 40% of total MPCE on non-food items. The percentage share of food items in the total MPCE has been continuously declining in both the rural and urban areas

- On an average, per capita calories and protein intakes in rural and urban areas have declined, while the per capita intake of fats has increased inboth Uttar Pradesh and India. The share of food grains (cereals plus pulses) in the total protein intake has declined during the last 15 years, while that of other food items has increased during the same period. The shares of milk & milk products and meat, fish & eggs have remained more or less stable since 1999-00.

- A decline in the share of regular employment in 2009-10 is a serious issue which implies that the fast growth of the formal economy could not generate adequate regular employment forthe workforce. During the last five years, regular and self-employment has declined, whereas casual employment has increased, indicating deterioration in quality of employment in urban areas.

- The rural-urban migration rates are found highest in economically backward region viz., SR, followed by CR and ER. However, increase in the migration rate is observed highest in NUGP, followed by SUGP. The high intensity of rural-urban migration in SR is largely driven by distress factors, while increase in the rural-urban migration rate in the Upper Ganga Plains is mainly due to growth induced factors.

- Most of the polluting industrial units are located on the banks of river Ganga or its tributaries and discharge untreated effluents into the river system, affecting its water quality and the ecosystem .

- Concentration of industries is highest in the Upper Ganga Plains and consequently the high level of industrial effluents and urban sewage released into the rivers has polluted the river ecosystem.

All the above conclusions amply indicate that the river has to carry a considerable amount of raw and diluted sewage created and discharged by the urban and industrial centres downstream which severely impair the quality of water adversely affecting human, plants and river ecosystem. The effect becomes far more glaring in view of the fact that a large amount of water stand already withdrawn from the Ganges and its tributaries in the upstream areas that has affected the water flows in the river and the assimilative capacity of river ecosystem.

Increasing urbanization and industrialization do affect the economic, social and health aspects of communities, besides affecting the socio-cultural fabric of the people. Increasing economic and educational opportunities in the urban areas, coupled with more or less stagnant agriculture, rural

to urban migration is certainly going to grow at a faster rate which may see a total transformation of the rural and urban scene whereby while the class II cities shall get transformed into Class I and the latter going for further expansion at a faster rate, class III and class IV cities moving upward in terms of status and further emergence of new class IV and below this category towns. All these developments may lead to a further concentration of population in these expanding and emerging urban centres putting a further stress on the urban infrastructure, creating more sewage and non-sewage waste loads to be finally discharged into already burdened river system, if no viable alternative option to the dumping and treatment of this waste is evolved. Industrialization may also grow at a faster rate, with some push from the government, with the objective of expanding the employment base of the state. Given the water and other needs of the growing towns, most of these developments may take place closer to the banks of river Ganga or its tributaries. Given the fact that municipal sewage contributes about 80% by volume of the total waste dumped into the Ganga and the industries contribute about 15%; and that about 36% of Class-I and 70% of Class-II cities of the State are located on the banks of River Ganga and further, about a quarter of class-I and class-II cities each are located on the bank of its tributaries, the situation has serious implications for the future of the river itself let alone preserving its spiritual and environmental values.

Most of the effluents that emanate from industries in the Upper Ganga Plains and the Central Region are highly polluting in nature. They are resulting from wide range of industries e.g., leather and leather products, distillery and breweries, chemicals, sugar, pulp & paper, metals and metal products, textiles, fertilizers etc. It is recognized that a number of such industries are not resorting to proper treatment of effluent. While the load on the river may increase as a result of generation and dumping of fast growing raw, under-treated and treated municipal waste and the industrial effluent and other pollutant discharge, the amount of water available in the river may deplete for the fact that the demand for river/ground water for agriculture may further grow. Given the current state of stagnation of agriculture sector and the need to produce more food, it necessitates initiation of fresh medium and large-scale irrigation schemes in the state, may lead to the increased diversion of water from Ganga and its tributaries. The demand for hydropower (cheaper mode of generating power) for sustaining and further promoting the developmental activities may also see construction of dams for hydropower development in the State which may alter the water flow system in the Ganga basin during the monsoon and dry seasons. Further the demand for water for household and industrial consumption may keep on growing with the faster pace of urbanization and industrialization. All these may have profound impact on the socio-economic and cultural aspects of many people who are directly or indirectly dependent on Ganga for their livelihood.

The above discussion points to the need for redefining priorities, so that tangible results could be achieved in the short-term. Given the fact that the level of urbanization and industrialization is most fast paced in the NUGP followed by SUGP and CR, treatment and safe disposal of municipal solid waste, sewage and industrial effluents are far more pressing in these ever expanding regions. These are also places where most of the religious rites are performed and congregations such as

Kumbh Melas are organized. Thus, theneed to put in place a robust and reliable waste disposable system, which encompasses both the municipal and industrial wastes is most pressing. These systems may not necessarily be drawn keeping in view the export of final discharge into the Ganga river system but may be designed based upon the two fundamental principles: first, zero discharge into the river system, and second, recycling of waste water and solids for productive uses.

Since urbanization and industrialization are highly inter-relatedphenomenon, a high level of urbanization in the Upper Ganga Plains and the Central Region of the State also has a high concentration of industries, thereby generating high level of pollution. This suggests that for maintaining the wholesomeness of River Ganga, emphasis of the GRBEMP should be more on these regions of the State.

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Appendix

Table A.1: Trend of Population and Urbanisation in Uttar Pradesh

Year	Population (Crore)			Population (%)		Decadal Variation (Crore)	Growth Rate of Urban Population	No. of Uas and Towns
	Total	Rural	Urban	Rural	Urban			
1901	4.86	4.33	0.54	88.94	11.06	---	---	349
1911	4.82	4.33	0.49	89.82	10.18	-0.05	-8.87	350
1921	4.67	4.18	0.49	89.46	10.54	-0.15	0.41	367
1931	4.98	4.42	0.56	88.85	11.15	0.31	12.81	375
1941	5.65	4.95	0.7	87.58	12.42	0.68	26.47	385
1951	6.32	5.46	0.86	86.36	13.64	0.67	22.87	410
1961	7.38	6.43	0.95	87.15	12.85	1.05	9.84	215
1971	8.83	7.6	1.24	85.98	14.02	1.46	30.75	256
1981	11.09	9.1	1.99	82.05	17.95	2.25	60.62	298
1991	13.21	10.61	2.6	80.33	19.67	0.83[@]	30.52	631
2001	16.62	13.17	3.45	79.22	20.78	3.41	32.99	670
2011	19.96	15.51	4.45	77.72	22.28	3.34	28.75	

Note: @ undivided U.P

Source-Census of India.

TABLE A.2: Rural and Urban Classification of Population (%) in Uttar Pradesh --- 1981-2011.

	1981		1991		2001		2011	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Uttar Pradesh	**82.07**	**17.93**	**80.3**	**19.7**	**79.2**	**20.8**	**77.72**	**22.28**
Northern Upper Ganga Plain	72.48	27.52	69.67	30.33	68.36	31.64	63.32	36.69
Southern Upper Ganga Plain	80.82	19.18	78.61	21.39	77.54	22.46	76.54	23.46
Central Region	80.32	19.68	77.87	22.13	77.12	22.88	76.06	24.79
Southern Region	80.08	19.92	80.91	19.09	79.54	20.46	79.08	20.92
Eastern Region	90.07	9.93	89.06	10.94	89.07	10.93	88.51	11.49

Source: Calculated from Census Reports

Table A.3 : Metropolitan Urban Agglomerations and cities in Uttar Pradesh in 2011 and the Decadal Variations in their population since 1951

	Population							Decadal Growth (%)					
	1951	1961	1971	1981	1991	2001	2011	1951-61	1961-71	1971-81	1981-91	1991-01	2001-11
Agra UA	375665	508680	634622	747318	948063	1331339	1746467	35.41	24.76	17.76	26.86	40.43	31.18
Allahabad UA	332295	430730	513036	650070	844546	1042229	1216719	29.62	19.11	26.71	29.92	23.41	16.74
Ghaziabad UA	43745	70438	137033	287170	511759	968256	2358525	61.02	94.54	109.56	78.21	89.2	143.58
Kanpur UA	705383	971062	1275242	1639064	2029889	2715555	2920067	37.66	31.32	28.53	23.84	33.78	7.53
Lucknow UA	496861	655673	813982	1007604	1669204	2245509	2901474	31.96	24.14	23.79	65.66	34.53	29.21
Meerut UA	245179	294853	383106	542998	849799	1161716	1424908	20.26	29.93	41.74	56.5	36.7	22.66
Varanasi UA	369799	505952	635175	797162	1030863	1203961	1435113	36.82	25.54	25.5	29.32	16.79	19.20

Source: Provisional Population 2011, Town and Country Planning Organisation, Ministry of Urban Development, GOI, January 2012

Table A.4: Classwise Growth of Urban Population (%): 1901-2001

Years	Class I	Class II	Class III	Class IV	Class V	Class VI
1901	24.20	13.97	11.42	18.28	21.22	10.91
1911	25.66	13.49	11.00	18.47	19.64	11.74
1921	25.71	15.34	10.68	15.73	19.6	12.93
1931	27.89	14.25	15.82	15.29	16.78	9.97
1941	37.77	10.81	16.99	12.89	15.21	6.32
1951	45.70	9.04	14.4	11.42	13.51	5.94
1961	54.88	11.76	16.65	10.85	5.65	0.22
1971	57.66	10.93	16.87	9.83	4.54	0.18
1981	51.48	12.43	12.82	13.39	8.46	1.42
1991	55.54	11.83	14.04	12.27	5.85	0.51
2001	58.87	11.36	15.55	11.04	3.04	0.14

Source: Changing face and challenges of Urbanisation (A case study of Uttar Pradesh) by shahnazpraveen

Table A.5 (a): Class-wise Number of towns and population across different Regions of Uttar Pradesh

Regions	Town No.		Class I				Class II				Class III			
			1991		2001		1991		2001		1991		2001	
	1991	2001	Population	Number	Population	Number	Population	Number	Population	Number	Population	Number	Population	Number
NUGP	**123**	**129**	**3185825**	**11**	**4950087**	**13**	**789161**	**12**	**1283689**	**18**	**975816**	**31**	**1197335**	**40**
SUGP	**203**	**215**	**4068869**	**12**	**5013592**	**15**	**675688**	**10**	**1091268**	**17**	**1236687**	**36**	**1775506**	**63**
CR	95	98	3975381	6	5573001	8	402611	6	323904	5	487799	18	651960	22
SR	49	55	313491	1	816844	4	329707	3	286515	5	481603	10	365345	12
ER	179	202	2946383	8	4272495	14	1329381	12	722262	10	1174544	26	1311532	47

Note:NUGP=Northern upper Ganga Plain, SUGP= Southern upper Ganga Plain, CR= Central Region, SR= Southern Region, ER= Eastern Region

Source: Calculated from Census 1991,2001

Table A.5 (b): Class-wise Number of towns and population across different Regions of Uttar Pradesh

Regions	Town No.		Class IV				Class V				Class VI			
			1991		2001		1991		2001		1991		2001	
	1991	2001	Population	Number	Population	Number	Population	Number	Population	Number	Population	Number	Population	Number
NUGP	**123**	**129**	**860905**	**59**	**724914**	**49**	**74896**	**9**	**57662**	**8**	**3581**	**1**	**4890**	**1**
SUGP	**203**	**215**	**1147289**	**65**	**998369**	**70**	**562387**	**68**	**359441**	**43**	**45931**	**11**	**23935**	**6**
CR	95	98	321864	23	433259	31	495290	35	241396	31	12914	3	8229	2
SR	49	55	347788	15	255834	19	185528	16	118973	15	19201	3	0	0
ER	179	202	1578256	68	1297130	94	761198	62	254487	32	8643	2	16839	4

Note:NUGP=Northern upper Ganga Plain, SUGP= Southern upper Ganga Plain, CR= Central Region, SR= Southern Region, ER= Eastern Region

Source: Calculated from Census 1991,2001

Table A.6: Household Main Occupation (%) in rural and urban areas, Uttar Pradesh, 1983-2010

Particulars	1983	1987-88	1993-94	1999-00	2004-05	2009-10
Rural Area						
Self employed in non-agriculture	13.1	12.7	13.2	14.7	18.5	16
Agricultural labourer	18	20.1	15.3	19.7	13.7	11.3
Other labour	4.1	5.5	3.9	5.7	9.2	18.1
Self employed in agriculture	56.2	53.9	54.2	46.8	49.2	44.7
Others	8.6	7.7	13.3	13.2	9.4	9.8
Urban Area						
Self employed	45.1	45.6	46.4	46.7	49.3	43.5
Regular wage/salary earning		35.3	34	33.9	34	30.2
Casual labour		9.1	9.3	10.4	8.8	12.7
Others	54.9	10	10.3	9	7.9	13.5

Note: computed from the unit level data of concerned NSS rounds.

Table A.7: Variation in migration profile between 1991 - 2001 for Uttar Pradesh based on migrants by last residence

	(Duration0-9years)		
	2001 Census	1991 Census	Variation (1991-2001) (%)
In-migrants (from other states)	1,431,551	728,329	96.6
In-migrants (from abroad)	61,248	58,960	3.9
Total in-migrants	1,492,799	787,289	89.6
Out-migrants	4,165,419	2,457,996	69.5
Net migrants (+/-)	-2,672,620	-1,670,707	60

source: http://censusindia.gov.in/Data_Products/Data_Highlights/Data_Highlights_link/data_highlights_D1D2D3.pdf

Table A.8 (a): Percentage distribution of slums in Uttar Pradesh and all India by type of

	ownership of land					
	notifiedslum			non-notifiedslum		
	private	public	not known /n.r.	private	public	not known /n.r.
UttarPradesh 2008-09	73	16	11	81	19	0
UttarPradesh 2002	98	2	0	74	25	1
all-India:2008-09	**37**	**60**	**3**	**42**	**54**	**5**
all-India:2002	**36**	**64**	**1**	**35**	**63**	**2**
	structure of majority of houses					
	notifiedslum			non-notifiedslum		
	pucca	semi pucca	katcha	pucca	semi pucca	katcha
UttarPradesh 2008-09	89	1	11	57	5	38
UttarPradesh 2002	61	38	1	16	45	40
all-India:2008-09	**64**	**30**	**7**	**50**	**29**	**21**
all-India:2002	**65**	**30**	**6**	**30**	**40**	**30**

Table A.8 (b): Percentage distribution of slums in Uttar Pradesh and all India by type of

	major source of drinking water							
	notifiedslum				non-notifiedslum			
Uttar Pradesh/INDIA	tap	tube-well	well	others	tap	tube-well	well	others
UttarPradesh 2008-09	22	79	0	0	24	76	0	0
UttarPradesh 2002	34	67	0	0	59	41	0	0
all-India:2008-09	**79**	**17**	**1**	**3**	**77**	**17**	**2**	**3**
all-India:2002	**84**	**10**	**2**	**4**	**71**	**22**	**2**	**5**
	availability of electricity connection							
	notifiedslum				non-notifiedslum			
	households and street	households only	street light only	no electricity	households and street	households only	street light only	no electricity
UttarPradesh 2008-09	73	1	11	15	17	25	24	34
UttarPradesh 2002	67	33	0	1	41	13	1	46
all-India:2008-09	**76**	**16**	**7**	**1**	**53**	**26**	**15**	**7**
all-India:2002	84	11	4	1	53	25	6	16

Table A.9: Industrial Indicators of Uttar Pradesh

	No. of Industrial areas per lakh population	No. of small scale industries per lakh population	Net value added per worker in registered factories (000 Rs)	No. of employees in registered factories per lakh of population
District	2009-10	2009-10	2006-07	2006-07
Saharanpur	0.03	26.31	1859.11	316.63
Muzaffarnagar	0.02	28.35	127.32	389.62
Bijnor	0	14.44	237.17	700.29
Moradabad	0.04	17.63	22.53	946.92
Rampur	0.09	22.97	326.42	360.1
JyotibaPhule Nagar	0.12	15.49	179.84	1019.33
Meerut	0.09	40.41	0.26	627.15
Baghpat	0.16	28.46	4.92	266.83
Ghaziabad	0.34	31.25	62.14	1578.71
G.B.Nagar	0.39	78.79	152.25	11253.11
Bulandshahr	0.09	28.59	378.04	401.81
Aligarh	0.08	15.54	32.2	285.16
Hathras	0.07	22.75	25.59	206.69
Mathura	0.25	23.41	10267.62	490.53
Agra	0.11	19.47	1.97	957.68
Firozabad	0.04	23.2	12.69	583.92
Etah	0.11	10.12	739.43	36.01
Mainpuri	0.05	18.73	233.09	97.86
Badaun	0.03	17.59	758.94	102.09
Bareilly	0.02	21.3	169.31	422.92
Pilibhit	0	32.08	10.55	287.17
Shahjahanpur	0.1	21.64	278.3	242.48
Farrukhabad	0.05	21.38	390	120.87
Kannauj	0	13.86	96.77	222.7
Etawah	0	21.26	14.57	159.6
Auraiya	0.08	12.25	8.71	42
Kheri	0.03	12.76	156.22	286.9
Sitapur	0.05	9.29	1.03	137.08
Hardoi	0.03	9.86	11.08	70.49
Unnao	0.16	20.52	345.69	257.01
Lucknow	0.07	20.41	32.31	399.95
Rae Bareli	0.3	14.52	64.65	106.4
Kanpur Deh	0.28	19.32	429.77	334.4
Kanpur Nag	0.18	17.79	26.77	1043.7
Fatehpur	0.04	19.7	213.62	94.75

Barabanki	0.1	16.07	8.2	219.64
Jalaun	0.12	23.72	425.62	77.99
Jhansi	0.1	28.51	1159.51	231.8
Lalitpur	0.17	37.75	326.25	2.79
Hamirpur	0.09	22.91	42.58	63.16
Mahoba	0	21.18	809.79	13.26
Banda	0.12	21.15	551.22	10.34
Chitrakoot	0.2	13.23	..	..
Pratapgarh	0.03	11.02	42.88	4.25
Kaushambi	0	18.12	237.27	86.56
Allahabad	0.02	10.02	503.1	253.65
Faizabad	0.08	17.4	31.44	84.96
Ambedkar Nagar	0	12.12	1227.68	57.69
Sultanpur	0.32	12.49	26.83	140.86
Bahraich	0	14.06	78.82	57.14
Shrawasti	0	5.72	0	..
Balrampur	0.05	3.9	457.28	150.79
Gonda	0	10.31	275.48	45.51
Siddharth Nagar	0	8.16	0	*
Basti	0.04	12.65	3.05	62.36
SantKabir Nagar	0.06	4.08	67.13	26.12
Mahrajganj	0	10.56	402.59	44.25
Gorakhpur	0.02	11.97	3.29	183.69
Kushinagar	0	4.27	163.81	122.15
Deoria	0.03	11.34	70.04	59.55
Azamgarh	0	5.95	64.78	18.31
Mau	0.05	15.39	11.39	51.44
Ballia	0	14.47	2711.75	17.12
Jaunpur	0.02	10.92	53.33	71.16
Ghazipur	0	14.52	14.05	58.06
Chandauli	0.1	13.92	13.69	96.5
Varanasi	0.03	15.51	16.38	143.13
SantRavidas Nagar	0	19.07	154.81	263.31
Mirzapur	0	13.88	81.53	47.31
Sonbhadra	0.05	21.79	2705.89	764.88
Uttar Pradesh	**0.07**	**17.39**	**361.38**	**373**

Source: District-wise development indicators, Uttar Pradesh

TableA.10 : Industrial Indicators of Uttar Pradesh

	Per capita gross value of industrial production(Rs)	No. of working factories per lakh of population	District wise percentage distribution of registered factories	Average workers per registered working factory
Districts	**2006-07**	**2006-07**	**2006-07**	**2006-07**
Saharanpur	6329.35	5.09	1.42	47.34
Muzaffarnagar	8865.09	9.82	3.42	29.62
Bijnor	5603.53	6.54	2.04	92.63
Moradabad	6278.16	9.36	3.6	92.48
Rampur	4024.15	5.5	1.05	53.69
JyotibaPhule Nagar	10790	6.61	0.92	132.08
Meerut	9802.88	14.83	4.37	31.43
Baghpat	3559.26	3.68	0.4	60.27
Ghaziabad	36118.3	33.82	11.97	33.6
G.B.Nagar	235500	155.38	19.56	53.38
Bulandshahr	11337.3	9.1	2.54	31.57
Aligarh	4188.91	5.37	1.61	45.51
Hathras	1843.48	7.36	0.88	23.33
Mathura	63868.4	7.07	1.44	50.47
Agra	6690.69	11.93	4.36	71.07
Firozabad	2760.82	12.34	2.58	39.9
Etah	1292.43	0.81	0.22	34.44
Mainpuri	1387.08	3.79	0.58	22.09
Badaun	2358.84	0.59	0.18	129.85
Bareilly	6074.49	7.56	2.7	44.14
Pilibhit	4234.66	3.83	0.63	48.52
Shahjahanpur	4530.05	3.93	1	43.56
Farrukhabad	941.77	3.63	0.56	26.46
Kannauj	1181.63	6.78	0.9	27.84
Etawah	557.55	3.87	0.5	35.54
Auraiya	203.74	1.34	0.15	29.59
Kheri	4676.41	2.83	0.92	75.9
Sitapur	2417.86	2.27	0.82	41.8
Hardoi	1112.6	1.07	0.35	47.5
Unnao	5905.6	3	0.79	68.55
Lucknow	8103.81	9.74	3.66	27.03
Rae Bareli	1194.82	1.64	0.46	51.79
Kanpur Deh	13212.9	5.6	0.86	48.63
Kanpur Nag	11489	20.35	8.37	40.73
Fatehpur	50419.2	2.97	0.66	21.95
Barabanki	3852.73	2.92	0.77	59.61

Jalaun	2590.14	1.33	0.19	52.43
Jhansi	3118.43	3.76	0.64	46.53
Lalitpur	7.91	0.9	0.09	1.2
Hamirpur	2901.75	0.98	0.1	55.09
Mahoba	33.44	2.06	0.14	4.69
Banda	313.57	0.16	0.04	9.75
Chitrakoot	..	..	0.02	94.5
Pratapgarh	20.11	0.66	0.18	4.65
Kaushambi	330.83	2.14	0.26	34.07
Allahabad	5831.89	3.7	1.85	49.15
Faizabad	1476.8	3.11	0.64	20.13
Ambedkar Nagar	1839.31	1.68	0.34	23.68
Sultanpur	5258.57	1.72	0.54	68.07
Bahraich	1000.01	0.87	0.31	46.71
Shrawasti	..	..	0.01	11
Balrampur	3344.48	1.24	0.2	94.17
Gonda	1619.39	0.45	0.12	80.93
Siddharth Nagar	*	*	*	*
Basti	1019.3	0.22	0.04	183.8
SantKabir Nagar	441.79	0.57	0.08	36.67
Mahrajganj	675.42	0.77	0.17	40.42
Gorakhpur	2912.05	3.14	1.16	47.15
Kushinagar	1160.86	0.37	0.11	247.92
Deoria	415.19	0.7	0.19	61.29
Azamgarh	71.67	0.61	0.24	20.11
Mau	404.17	1.59	0.29	22.85
Ballia	99.84	0.3	0.08	39.33
Jaunpur	2211.72	1.82	0.69	31.56
Ghazipur	256.28	1.35	0.41	38.28
Chandauli	3591.83	5.45	0.89	11.95
Varanasi	1806.44	4.48	1.39	23.34
SantRavidas Nagar	4052.36	4.38	0.58	45.92
Mirzapur	478.9	3.24	0.68	10.62
Sonbhadra	19053.9	0.59	0.09	1054.8
Uttar Pradesh	**7653.21**	**6.09**	**100**	**47.58**

Source: District-wise development indicators, uttar Pradesh