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## TRENDS OF URBANIZATION DURING THE PAST HUNDRED YEARS AND CONTEMPORARY URBAN ISSUES OF DELHI METROPOLITAN AREA

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### ABSTRACT:

*This study attempts to analyze the trends of urbanization for a period of hundred years (1911-2011) and to explore contemporary urban issues in the Delhi Metropolitan Area (DMA). Historically, urbanization is not a new phenomenon but world has seen that cities have grown rapidly in the late twentieth century. Technological advancement, diversified sector of economy and better living facilities have fostered the development of modern cities in the world. In addition to these, administrative functions and geographical location have also promoted the process of urbanization in the cities like Delhi, which enjoys unique position as capital city almost since its inception. The rate of urbanization in DMA was rather high due to the phenomenal population growth during the last hundred years (1911-2011). As a result, there has been a rapid expansion of urban Delhi to accommodate the increased population. Sometimes the expansion of the city was haphazard, which is palpable today that a number of inhabitants residing in unsuitable or less suitable areas. Uncontrolled urban growth and unplanned urbanization often impose some serious social, economic and environmental problems, which affect detrimentally the quality of life and sustainability of urban Delhi. Similar to situations in the most of metropolitan cities, DMA is confronting several urban problems, which may identified as limited land availability, shortage of housing, non-conforming land use, expansion of squatter settlements, tremendous pressure on the existing urban infrastructure, inadequate water supply, problem of sanitation, environmental degradation, pollution, urban congestion and social delinquency. Besides these, rapid urban growth may impose financial burden on the government because government bears heavy responsibilities to provide education, health facilities, houses, transport and public utilities.*



**KEYWORDS:** Delhi Metropolitan Area, Urban growth, Urbanisation, Urban problems, Sustainability.

### INTRODUCTION

However the origin of Delhi is quite uncertain, but it is believed that it is an ancient town. The evolution of modern Delhi starts with the foundation of the old city in mid seventeenth century when Mughal King Shahjahan shifted the capital of Mughal Empire

back from Agra to Delhi. Before this, Delhi had served as the capital of first the Hindu and later the Delhi Sultanate dynasties. The rulers of various dynasties, mainly considering strategic and defensive importance, developed the different parts of Delhi as their capital, but these capital cities

could not survive for a long time (Singh, 2019, p. 233). The old city or Old Delhi, a well planned city served as capital of the Mughal Empire from 1638 AD onwards. In 1911, it was declared as the capital of British India and a new site near Raisina Hills was chosen to develop as a new capital city, which is now known as New

Delhi. After independence in 1947, New Delhi has been recognized as capital of India. Delhi had not developed only as a capital city in the Mughal and British period, but it also emerged as the prominent centre of trade and commerce. All these political and economic activities spurred the development of the city and a large population which was virtually rural was converted into urban. After independence, as in the other cities of the world, the increased employment opportunities due to the emergence of the modern sectors of the economy and better infrastructure have attracted people from all over the country, consequently unprecedented increase in population and rapid process of urbanization has largely promoted to urban growth in Delhi. In the early twentieth century, Delhi was a small urban centre in terms of both area and population but now; it has been completely transformed into a multi-functional metropolitan city.

Urbanization is a process of becoming urbanized or in other words it is the transformation of a rural population into urban population. There are the two major aspects of the urbanization: the growth of urban population and the expansion of the city. It is also important to mention here that urban growth and urbanization are not identical terms. According to Hill (2005, p.3), 'urban growth is the outward and physical development of a town or city.' He further writes that 'urbanization is the increasing percentage of people living in urban areas.' Thus, urban growth stands for the net population increase and expansion of built-up area in city or town whereas urbanization reflects the proportional increase in urban population in relation to the total population of a city or town. Population growth is considered to be a driving force for rapid urbanization, which poses formidable challenges including environmental degradation and pollution. The population growth and the expansion of Delhi Metropolitan Area, both were more rapid due to large-scale migration from rural areas in post-independence period.

### OBJECTIVES

The high level of urbanization promotes the social and economic transformation. In turn, these factors also have a comprehensive effect on the process of urbanization. The process of urbanization was more rapid in Delhi Metropolitan Area during last hundred years (1901-2011). Therefore, it is necessary to study the whether this process of urbanization has promoted or obstructed the sustainability of the city. This study has following objectives:

1. To ascertain the growth of urban population.
2. To analyze the trends of urbanization.
3. To assess the contemporary urban issues and implications of urbanization.

### STUDY AREA:

Almost since its inception as a capital city, Delhi has potential importance due to its geographical and strategic location. Delhi Metropolitan Area (DMA), which lies in National Capital Territory (between 28°23'17"N & 28°53'00"N latitudes and between 76°50'24"E & 77°20'37"E longitudes) is geographically located between mountain ranges of the Great Himalayas in the north and the Aravallis in the south and between the Thar Desert in the west and the Gangetic Plain in the east. Politically, it has been delimited by Uttar Pradesh in the east and by Haryana in the south, west and north. Geographically, a major part of DMA is alluvial plain, which consists of newer and older alluvium. Delhi Ridge, which is an extension of Aravalli range and the Yamuna River are the most dominating geographical features of DMA. Extremely hot summers and severe winter are the best known features of Delhi climate. Almost all parts of the territory suffer from erratic rainfall and shortage of water. Climate of Delhi may be classified as semi-arid. Despite these adverse climatic conditions, this area has been inhabited since ancient times and has served as the capital of various dynasties. Delhi has experienced the accelerated growth of population in the last century. With the population of 167.8 lakh in 2011, DMA is one of the fastest growing metropolitan areas of the world.

## METHODOLOGY

This study, which seeks to analyse the trends of urbanization in Delhi Metropolitan Area is based on the secondary data collected mainly from the Census of India 2011 and various editions of the Economic Survey of Delhi. The population data collected from various sources has been computed to achieve the results. As far as urban challenges are concerned, the analysis is also based on secondary sources, but a field study has also been conducted to assess the ground reality. To evaluate the environmental challenges, reports of Delhi Pollution Control Committee, Central Pollution Control board and National Disaster Management Authority have also been consulted. Apart from these, information has been also collected from relevant journals and books.

## TRENDS OF URBANISATION

Urbanization is not a new phenomenon in Delhi. A comprehensive history of urbanization in Delhi starts as far back as in the mid of eleventh century when Lalkot, the earliest fort of Delhi was constructed. Since then Delhi has seen repeatedly the rise and fall of various cities and many cultures. The present study focuses on the process of urbanization during a period of hundred years (1911-2011) when population growth and pace of urbanization, both were more rapid. The area and population of the Delhi Metropolitan Area, as per the census reports have undergone continuous change in this period. As mentioned above, Delhi was a small town with an area of 43.25 sq. km. in 1911 and its total population was a little over four lakh with an urban component of 57.50 percent. The population of DMA started increasing rapidly after the declaration of capital shift from Calcutta to Delhi in 1911 in British India. Despite the fact that the population of the country declined marginally during 1911-1921, the urban and total population of DMA increased significantly during the same period. A land of about 46 sq km, south of the walled city was acquired to establish new capital. Thus, the area of DMA increased to 168.09 sq km in 1921. The metropolitan area of Delhi has evolved over agricultural land, which is acquired from the villages from time to time. A continuous transformation of rural area into urban area may be seen in NCT Delhi.

**Table 1**  
**Trend of Urbanization in Delhi: 1901-2011**

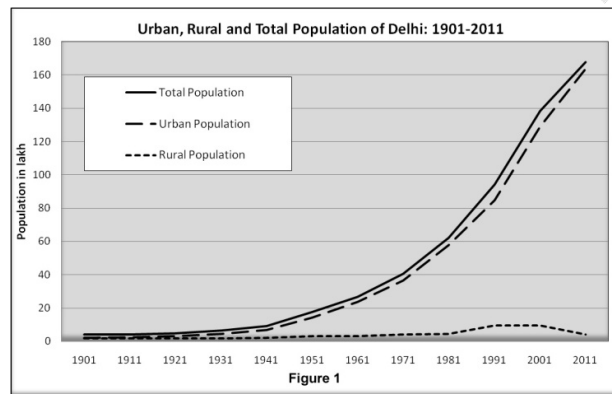
Census Year	Total Population	Total Urban Population	Total Urban Area (sq. km.)	Percent Urban Population	Decennial Urban Growth (percent)
1901	405819	214115	-	52.76	-
1911	413851	237944	43.25	57.50	11.13
1921	488452	304420	168.09	62.32	27.94
1931	636246	447442	169.44	70.33	46.98
1941	917939	695686	147.31	75.79	55.48
1951	1744072	1437134	201.36	82.40	106.58
1961	2658612	2359408	326.55	88.75	64.17
1971	4065698	3647023	446.26	89.68	54.57
1981	6220406	5768200	540.78	92.73	58.16
1991	9420644	8471625	685.34	89.93	46.86
2001	13850507	12905780	924.68	93.18	52.34
2011	16787941	16368899	1113.65	97.50	26.80

Source: Compiled and computed from Census of India 2001, Census of India 2011 (provisional), Economic Survey of Delhi: 2008-2009, Town and Country Planning Organization (2007), Delhi Statistical Handbook 2017 and Economic Survey of Delhi: 2017-2018.

The urban growth was steadily high regardless of political upheaval and the urban population grew more than doubled during 1921-1941. The decadal growth rate of urban population in DMA was recorded 46.98 percent and 55.48 percent in 1931 and 1941 respectively. The decennial growth rate

recorded by the census 1951 for the urban population of Delhi was 106.58 percent (Table 1). It is the highest decadal growth recorded ever in Delhi. It was mainly due to large-scale migration of displaced persons from Pakistan during the partition of the country in 1947 and since then decline in decennial growth rate was observed with the exception of census 1981 and census 2001, when a slight increase was recorded. However the decadal growth rate was over 50 percent with the exception of 1991 in Delhi up to the end of twentieth century.

After the independence, the significant increase in small industries, trade and commerce, educational centres, development of infrastructure and better civic services in DMA have not only accelerated the population growth but also the expansion of the city. Consequently, the process of urbanization was more rapid due to large-scale migration from all over the country especially from the neighbouring states. Although the rate of decadal *growth* slowed from 51.45 percent of 1991 to 47.02 percent in 2001 for the total population but decadal growth rate of the urban population increased from 46.86 percent in 1991 to 52.34 percent in 2001.



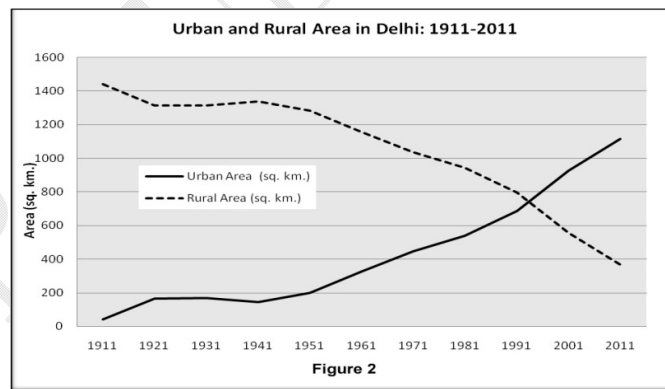
In 2011, the share of urban population in NCT Delhi is recorded 97.50 percent, which is the highest percentage of urban population in India. Table 1 reveals that the percentage of urban population has continuously increased from 57.50 in 1911 to 97.50 in 2011, except the 1991 census. In absolute term, the urban population has increased from 237,944 in 1911 to 16,368,899 in 2011. It shows more than sixty-eight fold increase in urban population in last hundred years. Table 1 also shows a remarkable variation in decennial growth of urban population. The decennial growth during 1901-1911 was only 11.13 percent and since then, when Delhi became the capital, the pace of urbanization increased significantly. In 2011, the decennial growth rate of total population and urban population has declined sharply and is recorded 26.80 percent for urban population. For the total population, it is much lower than the corresponding rate of the previous decades. 'It thus appears that the population growth of NCT Delhi is now showing a tendency towards stabilization' (Census of India 2011, p. 46). A significant fall in decadal growth rate, as per the census 2011 may be attributed to 'wide-ranging removal of slum from various parts of the city since 2001' (Census of India 2011, p. 49).

**Table 2**  
**Trend of Migration in Delhi 2007-2016**  
 (All figures in lakh)

S.N.	Year	Estimated Mid Year Population	Annual Increased Population Over Previous Year	Total Birth	Total Death	Natural Increase	Migration
1	2007	156.45	2.98	3.22	1.01	2.21	0.77
2	2008	159.49	3.04	3.34	1.08	2.26	0.78
3	2009	162.58	3.09	3.54	1.12	2.42	0.67
4	2010	165.74	3.16	3.59	1.24	2.35	0.81
5	2011	168.96	3.22	3.53	1.12	2.41	0.81
6	2012	172.24	3.28	3.60	1.05	2.55	0.73
7	2013	175.59	3.35	3.70	0.97	2.73	0.62
8	2014	179.00	3.41	3.74	1.21	2.53	0.88
9	2015	182.47	3.47	3.74	1.25	2.49	0.98
10	2016	186.01	3.54	3.79	1.42	2.37	1.17

Source: Office of Chief Registrar, Births & Deaths, Government of NCT Delhi (compiled from Economic Survey 2017-18, p.31).

Birth rate, death rate and migration are the three basic demographic variables, which are responsible for population change (demographic dynamism). For natural growth of population, only births and deaths are taken into account. Apart from natural growth, the main causative factor of high urban population growth is migration, which is much more realistic in the context of Delhi Metropolitan Area. Table 2 reveals the trend of migration in DMA from 2007 to 2016, in which both natural increase and migration are consistently high. Acceleration in the process of urbanization is associated with migration resulting from increased employment opportunities due to the development of industries, trade and miscellaneous services.



Due to population growth and urbanization of villages, the expansion of DMA is markedly rapid during last century. DMA has witnessed remarkable growth in the urban area during the last century and consequently sharp decline in rural area. The rapid pace of urbanization has promoted the encroachment on rural areas. The process of urbanization has converted a considerable number of rural villages into urbanized villages. In 1951, the number of inhabited villages in NCT Delhi was 304 and this number declined to 276 in 1961 and 243 in 1971. The rapid urbanization further reduced the number of villages and it was 214 in 1981. During 1991-2011, the number of inhabited villages declined from 199 to 112. The steady decline in the number of villages is the result of physical expansion of DMA.

Urban area, which was only 43.25 square kilometres in 1911, has increased to 1113.65 square kilometres in 2011 whereas urban population has increased from 2.38 lakh to 163.69 lakh during the same period. The most part of NCT Delhi was rural except a limited area of 43.25 square kilometres in 1911. The rural area has declined sharply and it was about 78 percent in 1961, 60 percent in 1981 and only 37.65 percent in 2001. It was 369.35 square kilometres in 2011, which accounts 24.09 percent. (Figures have been compiled and computed from Census of India 2001, Economic Survey of Delhi: 2008-2009 and Delhi Statistical Handbook 2017)

**Table 3**  
**District-wise Urban Population and Percentage Decadal Growth in NCT Delhi: 2011**

District	Urban Population	Percent urban Population	Percentage Urban Growth (2001-2011)	Percentage Decadal Rural Growth (2001-2011)
North West	3442589	94.15	32.60	-19.40
North	870232	98.00	18.40	-61.90
North East	2220097	99.04	36.50	-84.80
East	1705816	99.79	18.00	-80.60
New Delhi	142004	100	-20.70	-
Central	582320	100	-09.90	-
West	2536823	99.75	24.20	-92.60
South West	2149282	93.73	40.50	-36.30
South	2719736	99.55	29.10	-92.40
NCT Delhi	16368899	97.50	26.80	-55.60

Source: Census of India 2011 and Delhi Statistical Handbook 2017.

The population figures of Census 2011 depict that New Delhi and Central districts of NCT Delhi are fully urbanized whereas the urban population of North-East, East, West and South districts accounts more than 99 percent of their total population. It is also relevant to mention here that NCT has total eleven districts in which two districts have been created in 2012, thus census 2011 describes the population by dividing it into nine districts only. The urban population of North-West and North districts are 94.15 percent and 98 percent respectively, while South-West district has the lowest percentage of urban population, which accounts 93.73 percent. Thus, the spatial distribution of urban population follows the trend of decreasing urbanization from core to periphery. The decennial growth of urban population during 2001-2011 was the highest in South-West district; however New Delhi and Central districts, which are fully urbanized, show a decline in their population.

### CONTEMPORARY URBAN ISSUES

Although urbanization has the potential to improve the quality of life because it provides better facilities and services than its rural counterpart, yet it is accompanied with plethora of problems especially in metropolitan areas. Rapid urbanization is regarded as the root cause of urban challenges, which are being tolerated in DMA in these days.

**Limited Availability of Land:** The total geographical area of NCT Delhi is 1483 square kilometres, out of which about half of the area was estimated to have been built up in 2001. Master Plan-2021 has envisaged extending the urban limits of DMA up to the interstate boundaries of NCT Delhi to accommodate the projected population of 230 lakh by the year 2021. At this stage, Delhi will be a complete built-up area and its consequences will be more drastic. Three Master Plans, which have been

drawn since 1962 indicate the need for framing redevelopment strategy and modified development norms to enhance the population holding capacity of DMA within existing urban limits. To cope with acute shortage of land in Delhi, it should be attempted to encourage the population to deflect in NCR towns such as Noida, Ghaziabad etc.

**Shortage of Housing:** There is an acute shortage of housing in DMA and it is estimated that around 24 lakh dwelling units will be required by 2021. It is also significant that more than half of the population of DMA is still residing in unplanned residential areas. Thus, there are two main aspects of the problem of housing shortage i.e. quantitative and qualitative. The proposal of Master Plan-2021 also incorporates specific approaches for development of new housing areas as well as upgradation and re-densification through redevelopment of existing housing areas including unauthorized colonies and villages. Despite these, no housing strategy in DMA can overlook the environmental concerns. To provide adequate and affordable housing in an appropriate environmental condition is a much more difficult in DMA.

**Unplanned Development of Urban Villages:** The urban expansion of DMA has taken place on surrounding agricultural land of the villages, which were acquired for urban development whereas the residential areas remained rural within the urbanized limits of DMA. These residential areas were not included in development plans. In spite of poor infrastructure and unsanitary conditions, a large number of migrants aspiring for a livelihood are compelled to reside here due to low cost housing options. Liberal building bye-laws promote the uncontrolled growth of residential and commercial complexes in urban villages. Consequently tremendous population growth has been recorded in these villages. However, Delhi Development Authority has attempted to develop these settlements and Municipal Corporation has also made some efforts to provide basic civic services but haphazard growth of these villages has obstructed their planned development.

**Haphazard Development of Slums:** Development of slum in DMA is a manifestation of inability to accommodate the increasing number of migrants to the city in search of employment. Majority of the migrants contributes significantly in unorganized and informal segment of the metropolitan economy. They are low-paid workers and cannot afford adequate housing in DMA. These people build their shelter on any available land especially public land, from any available materials such as bamboo, mud, thatch, plastic etc. With lack of adequate infrastructure and basic civic amenities, such unauthorized settlements are not only densely populated and unhygienic but also prone to various environmental hazards. Although, various programmes for resettling slums have been implemented in Delhi since 1960 and a significant number of slum dwellers have been resettled in planned areas with basic infrastructure facilities. A huge population is still living in slum designated areas and slum population is consistently increasing, which pose serious problems on urban Delhi.

**Unplanned Development:** Despite the fact that urban planning in DMA introduced very early in British period and since then different plans have been implemented to organize DMA but a significant part of the city is still unplanned and it is worth the effort. More than half of the total population of Delhi is accommodated in unplanned residential areas, which includes slums, unauthorized colonies, resettlement colonies etc. With the lack of basic civic amenities, unauthorized and resettlement colonies are dispersed all over the city. Resettlement colonies are especially developed to shelter the squatters. The most of populace in these colonies belongs to urban poor and provides basically informal services.

### NON-CONFORMING INDUSTRIES:

Industrial growth is a post-independence phenomenon in Delhi and undoubtedly, it has played a vital role in the economic development of DMA. As per Master Plan- 2021, there were total 1.29 Lakh industrial units in DMA up to the end of tenth Five Year Plan. Around one lakh industrial units are located in non-conforming zones. Efforts have been made to relocate these industrial units but no

fruitful result could be achieved due to inaccessibility to new site, lack of infrastructure, incapability of owner etc.

**Overcrowding:** Urban congestion in DMA is evident especially in old city, where persistent congestion is inexplicable. Rapidly growing new commercial areas are also suffering from intensified overcrowding. Old city area, which mainly comprises walled city & its extension including Karol Bagh, has changed their residential character to non-residential character. Being the main business and commercial area of DMA, it is densely populated, overcrowded and noisy.

**Traffic Congestion:** The post-independence period, especially last four decades has seen a phenomenal growth in the numbers of vehicles in DMA. As per Master Plan-2021, the per capita trip rate (excluding walk trip) increased from 0.72 in 1981 to 0.87 in 2001. In absolute terms, the rise in total trips was from 45 lakh to 118 lakh for the same period and it is estimated that total trips would rise to 280 lakh by the year 2021. Apart from traffic congestion, the growth in number of vehicles has its inevitable consequences in terms of pollution and accidents. The problems and requirements of transportation have forced DMA to make serious efforts for mitigation of congestion.

**Environmental Constraints:** With phenomenal population growth and rapid urbanization in the last few decades, DMA produces a large amount of different types of pollutants, which have largely degraded the quality of air and water. Large quantity of solid waste is another serious threat to environment. Environmental pollution is now so severe in DMA that it has adversely affected the health of humans, animals and plants. It has already reached alarming level and with every passing year, it increases significantly and causes acute and irreparable damage to environment. The present environmental scenario of DMA constitutes a constraint to urban development. Rapid urbanization is also associated with environmental concerns resulted from the encroachment on ecologically sensitive areas such as Yamuna floodplain, Delhi Ridge and Asola wildlife Sanctuary.

Ambient air quality in DMA has deteriorated considerably over the years mainly due to human activities. Air pollution in DMA results from gaseous emission mainly from industries, vehicles and domestic combustion. The quantum of domestic air pollution has decreased significantly due to increase in numbers of LPG connection over few decades whereas vehicular pollution has increased rapidly. The concentration of major gaseous pollutants such as sulphur dioxide, oxides of nitrogen, carbon monoxide etc., and particulate pollutants have increased considerably and these are above the standard value for residential area. Surface and subsurface resources of water have become contaminated with harmful pollutants but situation is more alarming due to extreme contamination of the Yamuna River, which is the most important source of water in DMA. Due to heavy discharges of domestic sewage, waste water and industrial effluents, almost all the drains, which discharge into the Yamuna River, are highly polluted. The pollution load of the Yamuna River has increased greatly and availability of dissolved oxygen has declined significantly. Groundwater has also been contaminated by excessive concentration of fluorides, nitrates, chlorides and dissolved salts and it is unfit for drinking in most parts of DMA.

The huge quantity of solid waste, which is generated from different sources in DMA, is a serious threat to environment. The problem of safe disposal of solid waste is another critical issue in DMA. The different types of solid waste such as municipal solid waste, bio-medical waste, industrial waste, construction and demolition debris and electronic waste may be broadly classified as biodegradable and non-biodegradable. Biodegradable wastes are considered as eco-friendly whereas non-biodegradable wastes remain in the environment for a long time and cause damage to environment. However, some of the non-biodegradable wastes are recyclable but some contains toxic substances. Biodegradable wastes also contain some toxic and infectious substances. Both, biodegradable and non-biodegradable wastes are responsible for causing environmental pollution, which adversely affects the health of human beings and urban life.



## CONCLUSION

The massive urban transformation in Delhi is resulted from the exponential growth in urban population during the last century. The process of urbanization has occurred more rapidly and dramatically with more than sixty eight fold increase in urban population. The rapid expansion of Delhi, driven by population growth and urban development, leads to the extension of the city limits that have swallowed up neighbouring rural areas to form it a metropolitan city. Apart from the social and economic transformation, rapid urbanization has also led the gradual changes in land use and urban morphology of DMA. The causative factors of urbanization in Delhi are enhanced employment opportunities, better social services, greater civic services and options of political participation. The rate of urbanization was particularly high in Delhi Metropolitan Area during the partition of the country when a lot of expatriates from Pakistan were settled here. Besides this, the role of Delhi as the capital of India has also accelerated the growth of urbanization to a large extent.

On the other side, rapid urbanization and unplanned urban growth have posed unprecedented challenges leading to environmental degradation and poor infrastructures. Delhi is suffering from acute shortage of housing, inadequate water supply, congestion, mismatched land use and critical condition of pollution. The expansion of unauthorized colonies and slum has created obstacles in sustainable development of DMA. Unprecedented population growth and intensified urbanization mainly over the last six decades in DMA have resulted in serious environmental problems such as high levels of air & water pollution and solid waste accumulation. The environmental quality has been deteriorating following the expansion and development of the city. The state of environment is very severe in DMA that has led to various health side effects, environmental problems and urban destruction.

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