

Sociological and Environmental Implications of Urban Growth: A Study of Metropolitan Delhi

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The most distinctive feature of the 20th century has been the rapid and massive urbanization taking place everywhere in the world as a consequence of process of modernization. Migration from rural areas into towns is not peculiar to developing countries alone, but is a worldwide phenomenon. While at the beginning of this century only one person out of 10 lived in cities, by the end of this century one out of every two will be urban. According to one estimate, the number of metropolitan areas with populations beyond five million trebled between 1950 and 1990, and by the end of this century the urban population of the developing world will be almost double the size of the entire industrialized world! Such rapid urbanization is bound to affect not only the life style of the people, but has far reaching sociological and environmental implications for the society.

Urbanization in India

The process of urban development has been a big challenge to planners and administrators in India. According to the 1981 census the urban population increase in the 1970s for the country was more than four percent; the decennial growth of urban population in India during the period 1981-91 has been 36.19 percent, which has been much higher than the overall growth rate of 23.56. Since Independence in 1947, the urban population of the country has almost quadrupled.

India's urban population which was 79 million in 1961 has now risen to 220 million in 1992. The

urban population by the turn of the century is likely to be 315 to 325 million. The number of million plus cities is also likely to more than double from 23 at present to 49 by the year 2001. The seven largest Indian cities (Delhi, Bombay, Calcutta, Madras, Bangalore, Hyderabad, and Ahmedabad) hold one-fifth of the total urban population of the nation. By the year 2000, India will have the second largest urban population (350-400 million) in the world, next only to China. There will be 20 cities with more than a million population each, and 600 cities with population ranging from 50,000 to 500,000. Four of its cities—Calcutta, Madras, Bombay, and Delhi—will be among the 30 largest cities of the world, each with a population of more than 10 million.¹ This tremendous increase in urban population is certainly growing to aggravate the problems of already precarious living conditions of a large chunk of the population. As a result of the dramatic growth in the population, a large segment of population became increasingly dependent upon certain services provided by the government.

Urbanization accompanied by industrialization and general population growth, has placed heavier demands on transformation, communication, education, medical, health, and other services.

The phenomenon of urbanization takes place as a consequence of economic changes. The contribution of the urban sector to the Gross Domestic Product (GDP) which was a mere 29 percent in 1950-51 increased to 47 percent in 1980-81 and is estimated to rise to about 60 per cent by the turn of the cen-

Table 1: Population of Major Cities in 1981 and 1991

Name of the Cities	Population in 1981	Population in 1991
Bombay	8,243,405	12,571,720
Calcutta	9,194,018	10,216,272
Delhi	5,729,283	8,375,188
Madras	3,289,347	5,361,468
Hyderabad	2,545,836	4,280,261
Bangalore	2,921,751	1,080,848
Ahmedabad	2,548,057	3,297,655
Pune	1,686,109	2,485,014
Kanpur	1,639,064	2,111,284
Nagpur	1,302,066	1,661,409
Lucknow	1,007,604	1,642,134
Surat	913,806	1,517,076
Jaipur	1,015,160	1,514,425

ture. However, this positive role of urbanization in India is overshadowed by the increase in urban poverty, leading to deterioration in the physical environment and quality of life in the urban areas caused by widening gap between demand and supply of essential services and infrastructure. The worst sufferers are the poor, whose access to the basic services like drinking water, sanitation, education, and basic health services is shrinking.²

Demographic Profile of Metropolitan Delhi

Delhi being the national capital, a seat of power with a cosmopolitan culture and a sound economic base, has perhaps experienced the largest decadal growth of population at the rate of 51 percent. The migration to Delhi has been phenomenal. It is estimated that about 300,000 persons migrate to Delhi each year. The continuous increase in the number of migrants coupled with the natural increases has been responsible for a tremendous growth in its population and a haphazard expansion of the city. The population as of March 1, 1996 was estimated at 11.22 million; it is likely to be 13-36 million by the

turn of this century. Over a period of five decades, the urban land area of Delhi has increased at 0.51 percent as against population growth of 5.71 percent. Thus the growth of urbanization, besides creating greater demand for employment shelter and infrastructural services like education, health, water supply, and sanitation, has also been instrumental in slumming of Delhi population. As a consequence of the inadequacy of housing and affordable shelters. Delhi has 1,089 Jhuggi—Jhompri clusters (JJ clusters) slum and squatter colonies, housing a population of about three million deficient in the urban basic services including health.³

Migration Pattern in Metropolitan Delhi

The majority of growth in population of Delhi is due to increasing migration of poor and impoverished people from rural areas in search of employment. Being the capital of the nation and a major trade and industrial center Delhi acts as a powerful job magnet at the national level. The people in search of employment come from far and wide, but more particularly from neighboring states. Most of these migrants, being poor, build Jhuggies (temporary

huts) on all available vacant land and live an existence devoid of any infrastructure or essential services. A number of factors have accelerated this process of migration:

(a) expanding employment opportunity in growing cities in contrast to villages;

(b) employment and/or inducement by relatives in the cities;

(c) offer of employment by professional labor contractors from the cities;

(d) hopes and dreams of a better life in any crisis situation; and

(e) occasional cases of adventurism.

The major crucial problems emerging out of this migration have been the lack of basic facilities like water, electricity, drainage, and transport, leading to slums and shacks on roadsides, city alleys, railroads, canals, and drainage—unhygienic and disease-prone conclaves.

The Urban Expansion of Delhi

In 1911, Delhi was a small city with an area of 43.25 square kilometers (sq km). During the last 80 years, the urban area of Delhi has recorded a 15-fold increase. Between 1921-91, 656.98 sq km of rural land has been converted into urban, and up to 1991, 185 rural villages have been incorporated in the urban limits of Delhi. The First Master Plan of Delhi formulated by the Delhi Development Authority (DDA) in 1962 proved to be a major catalyst in the urban expansion of Delhi. The Second Master Plan for Delhi also envisages the acquisition of another 24,000 hectares of rural land by the year 2000. However, the spatial expansion of the city has not been uniform in all the directions. The land of these villages was acquired as and when it was required, without any concrete planning. As Delhi grows, its problems of land, housing, transportation, and management of essential infrastructure like water supply and sewerage become more acute. The physical expansion of Delhi due to spread of urbanization during the decade of 1980s claimed about 40 percent of the total territory area in 1981, compared to about 30 percent in 1971 and it is growing at a rapid pace.⁴

The Socio-Economic Impact of Migration Process

The process from rural to urban migration does not merely involve movement of population from one ecological setting to another; it is also a process which impulses a new distribution of demands and aspirations in a myriad of ways.⁵ The social and economic ecology of migrant populations together with the physical morphology of this setting make them distinct from the modern sector of the economy. The contemporary Indian city contains large segments of population forming the "lumpen proletariat" who are recruited from social groups of humble origin. The increasing proletarianization of the city at present and more so in the future is likely to shape its socio-economic structure and concomitantly the nature of its physical environment. These ecological settlements manifest not only the inadequacies and deprivations of the physical environment, but also a mechanism of adjustment to the processes of social change and modernization by the group who try to gain access to the city where such processes are centered.⁶ This process of change is both demanding and challenging.

The Housing Shortage

The migration of population in Delhi has created an acute shortage of houses. A comparison of the number of occupied residential homes in Delhi in 1991 with that of 1981 shows an increase of nearly 70 percent in the houses from 1,092,065 houses (rural, 68,824; urban, 1,023,241) in 1981 to 1,804,529 houses (rural, 1,75,851; urban, 16,28,678) in 1991. The households occupying these houses had also increased from 1981 figure of 1,211,784 households (urban, 1,139,862; rural, 71,922) to 1991 figure of 1,877,046 households (rural, 177,428; urban, 1,699,618). Today the city faces a total shortage of about 370,000 houses which is increasing day by day as migration of population increases.⁷

Problem of Housing the Migrant Population

The rapid pace of migration has resulted in the emergence of unauthorized and squatters conglom-

erates and degradation of the quality of life of the people. About 1.4 million population reside in unauthorized colonies, 2.2 million in jhuggi clusters and another 1.8 million reside in slum areas totaling to 4.4 million who live in substandard area without adequate services. Since 1900, the various local agencies like the DDA and the Municipal Corporation of Delhi have initiated efforts to deal with squatter problems. The action initiated is essentially a relocation/program under Jhuggi Jhompri Removal Scheme (JJR) of 1960. The scheme has been modified from time to time and in the recent years compulsion to undertake *in situ* upgrade and provision of basic services has been recognized. During 1990-91, a three-pronged strategy has been adopted for tackling the multi-dimensional problem by way of providing sites and services for the inhabitants of JJ Clusters as follows:⁸

(i) Relocation of jhuggi households from project lands required by land owning agencies.

(ii) *In situ* upgrade of JJ clusters where the land owning agencies issue no objection certificates (NOC) to the effect that the land is not immediately required by them.

(iii) The remaining JJ clusters which are not covered in either (i) or (ii) are to be provided with immediate basic civic amenities under the scheme of EIJJ. The EIJJ scheme is an on-going scheme since the Seventh Five Year Plan.

There is also a massive on-going program in jhuggi clusters for construction of pay and use toilets-cum-bath complexes and providing civic amenities like community drinking water hydrants/hand pumps, street light poles, drains from the points of water hydrants for flow of waste water, and installation of dalaoes (big dustbins⁹ for effecting sanitary disposal of garbage.

Resettlement Schgaes: Problems in Residential Mobility

As a result of the relocation of the JJ Clusters, many new resettlement colonies have come into existence in the periphery of the city. However, resettlement colonies are remote from city-center life and fluid job opportunities. They have small plots

of land with some basic utilities and with informally-built housing arranged by the occupants. The resettlement colonies are sanitary and cheap, but many poor households find them unsuitable as housing opportunities. They are too distant from work and places where petty trading takes place. After resettlement, the squatters found themselves in locations well away from job opportunities and dependent upon crowded buses to travel to work sites. The provision of utility services was scarcely any better than in the original locations. Family income tended to decrease mainly because the women could no longer find work in the neighborhood. The low charges for occupancy were less significant for welfare recipients than the disadvantages of the new location. Although the precise statistics are controversial, informed observers believe that 50 percent or more of the resettled households illegally sold their rights of occupancy to higher income households.¹⁰

Obviously, relocating poverty has some inherent difficulties. The general planning principles to locate squatters in proximity to jobs in integrated developments alongside other neighborhoods with some residential mix were compromised with the cheap sites and low charges for construction of the dwelling units. Generally squatters had low incomes, some 43 percent were illiterate, and many did not wish to be relocated.

Residential Mobility: The Socio-Economic Consequences

The resettlement of squatters was seen by many as moving of a slum from one point of a city to another. A whole neighborhood of squatters was moved en masse permitting them to live together and share together the newness of surroundings and improved conditions of life. The new hutments scattered in the north and center part of Delhi evolved a community in each pocket of hutments—a community of fellow immigrants based on a network of primary affiliation of language, region, village, caste, kin, or vocation who socialized and acculturated in the complex and diversified environs of a metropolitan Delhi. While shifting of hutment dwellers, no attention was paid by the DDA, which had by now

resettled more than 200,000 squatters families in the residential colonies, to blending of social, cultural, and economic ties of the settlers with their new surroundings. It was presumed that after initial hardship, their life style would be reestablished, but on the whole remained frustrated. Many of the new resettlement colonies had acute shortage of drinking water and poor sanitary conditions, which resulted in a number of skin and stomach diseases. In some colonies schools were functioning under tents and had no electricity. The social composition of squatter settlements reflected a distinctive feature of a rural lumpen proletariat; a majority of them still followed strong traditions of living together and provided a core of extensive social integration, surpassing caste and regional barriers.

A result of a survey conducted during 1978—79 by two researchers of the Indian Institute of Public Administration in some selected resettlement colonies found that there was no significant change in the average monthly income of respondent squatters. In fact the average monthly family income had been considerably reduced. There was considerable downfall in the job opportunities for residents of new resettlement colonies, especially job opportunities for women. Not only the average distance to their workplace increased from 3.4 km to 11.8 km, involving loss of time and money—even the average distance of public toilets increased from 77.02 meters in JJ hutments to 88.96 meters in the new colonies.¹² Even other services like medical dispensaries, post and telegraph offices, and markets became further off from the colonies. The difference between the living conditions in resettlement colonies and squatters settlements has brought out a very dismal picture of relocation drive.¹³

Urbanization and Social Tensions

Sociological implications on humanity of a world dominated by cities immediately bring to mind the social and communal tension which tend to develop more in the urban areas. Segregated settlement patterns in cities, inadequate urban infrastructure, competition for scarce resources and living close to each other—all these factors lead to an explosive

situation in times of stress in the urban areas as witnessed in frequent communal or ethnic riots in many cities of India. Delhi has been relatively free of these riots although certain areas are quite sensitive to such a phenomenon. One of the principal reasons for the potential growth of ethnic violence in urban areas is that the process of urban migration alters over the years the ethnic composition of the cities. This kind of permanent alteration in the composition of population and the ethnic arithmetic adversely affect the political power of some groups. But this changing arithmetic is also a reflection of the new kind of opportunity structure and a new kind of distribution of gains of modernization which favor some ethnic groups and militate thus against other groups. An explosive situation thus arises. The urban character of social tensions arising out of this conflict is largely attributable to the nature of urban development itself. The concentration of the large-scale industrial operations in a few big cities has resulted in the creation of a high ethnic division of labor in these cities. However, a large number of studies on the social and political correlates of urban migration in India suggest that the migrants in general, and the urban poor in particular, are neither participants nor beneficiaries of most of the urban strifes and tensions.¹⁴

Another cause of social tension in the cities in India is the crimes for economic gains that dominate in most Indian cities. Delhi is not immune from this scourge. Although crimes are numerous in Indian cities, they do not result from the spatial characteristics (size, density, and heterogeneity) of the city; rather they reflect the incidence of poverty and family deprivation which result from the exploitative path of economic development. With increasing levels of expectations some already better-off sections find their economic mobility blocked. There is, therefore, an increasing evidence of establishment of local gangs operating under the "big boss" in Mafia style.¹⁵ There is also considerable incidence of drug addiction, sexual offenses, juvenile delinquency, and street children. Large-scale violations of laws are also taking place with a view to securing pecuniary benefits at the cost of public interest.

Urbanization in Delhi: The Environmental Consequences

Delhi is today the world's fourth most polluted city and worst in India as far as vehicular pollution is concerned. It has more than 2.5 million vehicles on the roads today which is more than the combined vehicle population of the other three metros—Bombay, Calcutta, and Madras. Over two-thirds of the air pollution is due to the poisonous vapors emitted by them even as 100,000 new vehicles crowd the roads every year. Thermal Stations, hot mix plants, and over 105,000 small and medium industries, mostly in nonindustrial areas run without pollution control certificates, air and water pollution are responsible for a steep rise in environment: induced diseases affecting the young.¹⁶ Delhi is today beset with a number of problems—shortage of drinking water, contamination of water, uncollected heaps of garbage, improper disposal of liquid and solid wastes, congestion on roads, unhealthy living conditions, increasing air pollutants from anthropogenic services, extremely high noise levels, and a very unsafe social environment—all are indications of deteriorating urban environment. A more comprehensive list of such indicators will include indoor/outdoor space in dwellings, accessibility and quality of commercial, wealth, educational, and recreational services, availability and safety of employment, social integration, and cultural activities.¹⁷

The population increase in Delhi has been phenomenal. It recorded a 90 percent increase in population after Independence in 1947, and since then it has been growing steadily at more than 50 percent every decade. The slum population of Delhi as percentage of urban population is 32.8 percent in 1990. The city of Delhi has already exhausted the water of river Yamuna and converted it into a "perennial drain." In Delhi the demand-supply gap of water stood at 695 million liters per day (mld) in the year 1993. Between Wazirabad (North Delhi) and Okhla (South Delhi), 9.28 cu m of water is discharged into the river every second, during its 25 km run through the city. Delhi has a supply of 245 liters per capita per day, but there are areas in the city which do not even get a drop of water for many days.¹⁸

In Delhi, the capacity of the sewage treatment plants is less than the total sewage generated. Delhi has seven treatment plants with a total capacity of 1,272 mld while the city generates 1,716 mld. This shows that the remaining 444 mld goes into the river Yamuna untreated. The quality of water in Yamuna has deteriorated to such an extent that aquatic life does not exist in the river. The fecal coliform is also quite high in the river water, making it completely unfit for human use. There is an extreme shortage of sewage facilities in Metropolitan Delhi. Out of 108 urban villages under the jurisdiction of the Municipal Corporation of Delhi (MCD), only 69 villages have sewage facilities. In 553 unauthorized/regularized colonies in Delhi that are to be provided sewerage facilities, only 250 have been provided so far. The MCD goes for a cleaning drive of sewage lines before monsoon every year, but when the rain starts, many parts of northwest, west, and east Delhi become heavily waterlogged.¹⁹ Delhi generates about 4,000 tons per day of solid waste. Disposal of solid waste by the land-filling method is not done properly. There is no provision for controlling the smell emanating from organic decomposition of solid waste. The congested areas of the cities are not cleaned regularly. Meanwhile the garbage starts decomposing, generating foul gases and inviting pigs, dogs, flies, and mosquitoes. There is no provision for the safe disposal of hospital wastes, which contains germs and is likely to be the source of many diseases. Similarly, individual solid waste which is sometimes hazardous is also disposed along with municipal waste.²⁰ The vehicular population in Delhi has grown rapidly over the years. The transport sector alone emits 60 percent of total emissions and is about 865 tons daily. In quantitative terms the pollutants released by vehicles are less than those released by industries, but as the pollutants remain closer to the ground they tend to be more lethal. The thermal power stations in Delhi, i.e., Indraprastha, Rajghat, and Badarpar exit about 9.9 tons of pollutants in the air every hour. About 25,000 tons of fly ash are produced by these thermal power stations in Delhi, disposal of which is another problem, though it is available free of cost to any one.²¹

The noise pollution is a new addition to Delhi's environmental problems. According to a survey conducted by the Central Pollution Control Board in Delhi in 1989, it was found that noise levels in almost all the residential areas were higher than the standards. Noise levels as much as 110 decibels were recorded. Levels in the industrial areas, the day and night noise were within the prescribed limits. Commercial areas showed higher noise levels than the standards. The most disturbing trends were found in silence zones, where both day and night levels exceeded the limits. The noise levels in silence zones were between 50-100 decibels. At road intersections also, noise levels are around 80 decibels, exposing traffic policemen and street vendors to the menace of noise pollution.²²

Delhi at present has a supply of only 600 mld of water against its requirement of 800 mld. Its capacity for sewage treatment (1,250 mld) is less than half of what is needed; and it produces only about 350 megawatts (mw) of electricity while its need is for 1,600 mw. As against this scale of availability of basic services, the minimum requirement of water in the city in the year 2001 will be 4,030 mld; of sewage treatment, 3,170 mld; of solid waste management, 7,300 metric tons; and of power 4,000 megawatts. By that time its population may touch 14 million. It would appear from the above discussions that the various activities associated with the urbanization process has led to a steep degradation in the environment of metropolitan Delhi

The problem of environmental pollution in the city has assumed serious dimensions ranging from biological, physical, chemical, engineering, socio-economic, and political. The best way to tackle such problems is to identify the action to be taken in the field of environmental planning, which should be based on a combination of policy decisions, legislative checks, and technological innovations.²²

Concluding Observations

The above discussion in respect of the sociological and environmental consequences of urbanization of the city of Delhi suggests that a rapid global urbanization is an inevitable phenomenon. The de-

veloping world should become more aware of the economic, sociological, and environmental policy implications of urbanization. There is increasing realization today that there ought to be limits to the growth of large cities, to prevent deterioration in the quality of life. Satellite towns must be fashioned to decentralize development. Information and entertainment can be brought via satellite to villages. In remote areas, and with improved communication and technology, migration to cities must be made less appealing. It is necessary to reconcile city growth with healthy environment. Social sectors, including health and education, in the urban areas of the developing world require closer attention and more funds in order to improve the human development index.²⁵ Some of the suggestions made by the Jagmohan Committee in February 1995 for improving the social and environmental conditions of Delhi in respect of resettlement of squatters, implementation of the Capital Region Plan, stringent laws regarding waste management systems, and creation of small community-based organizations²⁶ are some urgent steps that need to be taken immediately if Delhi is to be saved from the imminent collapse and disaster to which it is rapidly heading. ■

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NOTES

1. Jagmohan. 1995. "Slum of India." *The Hindustan Times*, April 12, p. 17, eds 3-8.
2. See Heinz Bongartz. 1993. "Introduction," in K.C. Sivaramakrishnan Biplab Das Gupta and M. N. Buch, *Urbanization in India: Basic Services and Peoples Participation*. New Delhi: Institute of Social Sciences and Concept Publishing Company, pp. 2-3.
3. See R.K. Wishwakarma (Team Leader). 1996. "Emergency Health Care Load in Hospitals of Delhi." A working paper for the workshop held on May 8, 1996

- at the Indian Institute of Public Administration. New Delhi: IIPA, p. 1.
4. As an extensive analysis of the physical expansion of the City of Delhi, see Ashok Diwakar and M.H. Qureshi. 1993. "Physical Processes of Urbanization in Delhi." *Urban India*, Vol. XIII, No. 2 (July-December), pp.94-106.
 5. T. K. Majumdar. 1983. *Urbanising Poor*. New Delhi: Lancers Publication, p. 1.
 6. Ibid. p. 9.
 7. See "Special Report: For Delhi, It's Capital Punishment" in *The Hindustan Times*, August 7, 1994.
 8. See K.K. Bhatnagar. 1994. "Problems of Slum with Special Reference to Delhi" in *Nagarlok* (New Delhi), nos. XXVI, no.2, April-June 1994, pp. 57-67.
 9. Ibid. For a detailed analysis of the organizational effectiveness of the urban base services in the slum areas of Delhi, see R.K. Wishwakarma and Rakesh Gupta. 1994. "Organizational Effectiveness of Urban Basic Services Program in Selected Slum Areas of Delhi." New Delhi: Centre for Urban Studies. Indian Institute of Public Administration.
 10. For a detailed analysis of this problem, see Cedric Pugh. 1991. "Housing and Land Policies in Delhi," in *Journal of Urban Affairs*, Vol. 13, No.3, pp. 367-382.
 11. Ibid. p. 37.
 12. See Girish Misra and A. Gupta.
 13. Ibid.
 14. See *Report of the National Commission on Urbanization*, Vol. V, Part III, (New Delhi, August 1988) pp. 71-73.
 15. Ibid. P. 74.
 16. Kapoor, Aditi. 1994. "Trying to Make Delhi Liveable Again." *The Times of India*, July 5.
 17. Sharma, Rajesh. 1993. "Status of the Urban Environment: Delhi, Bombay, Ahmedabad, and Vadodara" in *Urban India*. Vol. XIII, No.2, July-December, p. 2-3.
 18. Ibid.
 19. Ibid.
 20. Ibid.
 21. Ibid.
 22. Quoted by Sharma, n. 17. pp. 24-25.
 23. Jagmohan. 1995. "Cities and Civilization! Delhi-A Case Study." *The Hindustan Times*, March 22, cols. 3-5, p.13.
 24. For a more detailed analysis, see T. Uday Bhaskara Reddy. 1989. "Impact of urbanization on Cities Environment in India," in S. D. Maurya (ed.), *Urbanization and Environment Problems*. Allahabad: Chugh Publications, pp. 176-193.
 25. Pawar, Sharad. 1994. "City Growth and Healthy Environment." *Tribune*, February 22.