

Delhi: a city of diversity and disparity

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This study analyses the internal structure of the National Capital Territory Delhi (NCTD), India.

It examines the patterns and processes of urban expansion by analysing land-use and land-cover changes in the city over time. By mapping neighbourhoods, the research identifies disparities at the city and ward levels with regard to health, education and infrastructural facilities.

KEY FINDINGS

- Delhi experienced a sharp decline in population growth from 4.2% in 1991–2001 to 2.4% in 2001–2011, although the population increased by 3.4 million in absolute numbers during 2001–2011.
- Despite the rate of sprawl having reduced since 2011, the city's built-up area expanded by 65% in the two decades preceding 2018.
- Most of this expansion (75%) has been unplanned and organic – unauthorised colonies and slums have proliferated due to informal land tenure, sky rocketing real estate prices and implementation failures of the Master Plan of Delhi 2001–2021.
- Population densities in certain parts of the city are among the highest in the world, with almost 40,000 people per km² in East Delhi.
- Access to basic amenities such as tap water, toilets and drainage varies considerably across the five Municipal Corporations of Delhi.
- Inter-Municipal Corporation disparities remain high in terms of fundamental amenities, while intra-Municipal Corporation disparities are observed in terms of higher-order amenities. This includes amenities such as access to treated tap water in premises and piped sewerage, and results from unequal allocation of resources between planned and low-income settlements.

About the study

This study¹ examines the diverse city of Delhi, the main administrative and political centre of India and the second largest city globally with a population of 16.3 million people recorded in the latest census in 2011.² Among other things, the research seeks to understand the emergence and transformation of various neighbourhoods over time.

The urban landscape of Delhi contains imprints of the rise and fall of several empires, each of which have added distinct architectural features. The walled city – ‘Old Delhi’, which dates back to the mid-17th century – sits beside settlements that were built during the Mughal Empire between the 16th and 18th century, as well as colonial settlements (civil lines) and railway colonies that grew under the British Empire from the mid-19th century.

Following Independence and the subsequent partition of India in 1947, Delhi received a huge influx of migrants from across its newly laid borders. To meet the demands for housing, the civic body of Delhi developed 36 colonies specifically for the migrant population from Pakistan. During 1950–1964, a private developer (Delhi Land & Finance, DLF) was also instrumental in re-shaping the city by developing planned residential areas predominantly for emerging elites and high-income groups. In 1957, the central government established the Delhi Development Authority (DDA) ‘to promote and secure the development of Delhi’. The DDA has subsequently developed some of the biggest planned residential colonies in the city to date. However, in addition to these planned interventions, over 55% of the city comprises unplanned settlements, including resettlement colonies, urban and rural villages, unauthorised colonies and slums.

The study is divided into three parts. First, satellite images³ of the city for the years 1999, 2011 and 2018 have been used to analyse changing patterns of land use and land cover. Next, drawing on secondary data from the latest Population Census (2011), a municipal ward-level analysis has been conducted highlighting socioeconomic characteristics and access to basic amenities. Spatial and statistical analyses have been conducted of the demographic, housing, infrastructural and socioeconomic condition of households, as well as empirical analyses of inequality, segregation/clustering, and the spatial division of selected indicators at the ward level. Finally, we have identified and audited selected neighbourhoods using a combination of Google Earth, Arc-GIS, ground truth data, focus group discussions and key informant interviews during neighbourhood visits. Eight types of settlements have been taken into consideration, as identified in the Master Plan of Delhi 2001–2021.⁴ Owing to the vast area of the city (1,488 km²), 50 wards spread over an area of 278.36 km² and 343 neighbourhood units have been selected and mapped for in-depth study.

Research results

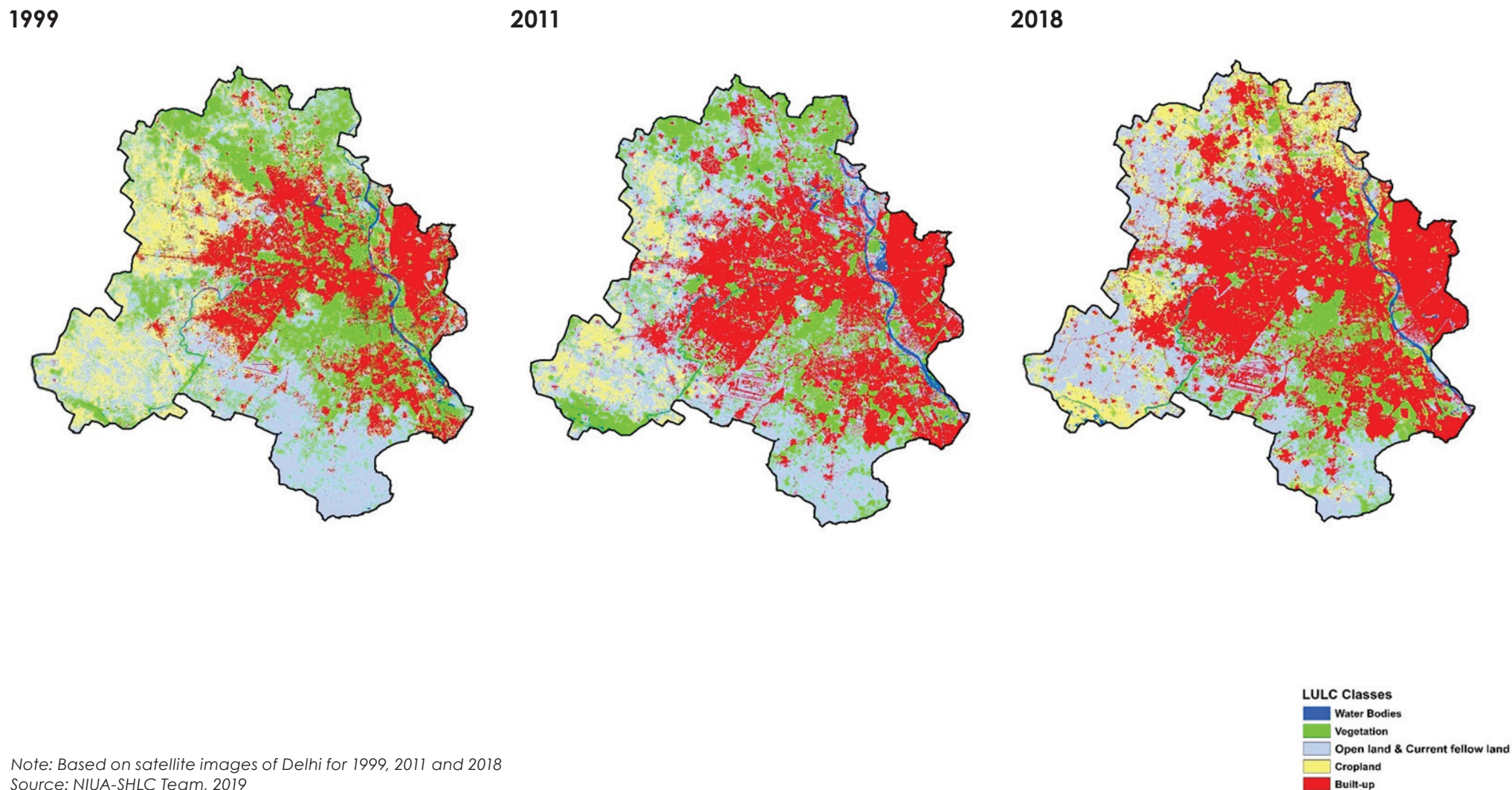
Changing patterns of land use and land cover

There have been notable changes in the patterns of land use and land cover in Delhi over time.

The city's built-up area increased from 336.82 km² to 598.22 km² between 1999 and 2018. Much of this expansion has taken place through encroachments onto land that was previously open, that contained vegetation or that was being used for agricultural purposes (land that accounted for 190.60 km² in 1999–2011 and 137.08 km² in 2011–2018). Some of the prominent factors driving this change include the increase in population, a shift from agriculture to service-sector jobs, the high land value in central areas of the city compared to the peripheries, and considerable foreign direct investment in construction, development projects such as townships, housing, built-up infrastructure and real-estate brokering services.

The urban expansion of Delhi has largely taken place on the eastern part of the city alongside the Yamuna River, as well as in the south western part of the city (see Figure 1). The built-up area has also increased in other parts of the west; however, this expansion has been relatively limited in comparison to the east. The development of certain neighbourhoods as sub-cities (e.g. Rohini, Dwarka and Narela) has also led to further construction activity around inner-city pockets. A decline in the rate of urban sprawl was observed between 1999 and 2018, when more compact developments sprung up within a 20 km radius from the city centre. This was largely due to stringent action against illegal construction activities, although the vertical development of buildings was allowed.

Figure 1. Change in land-use and land-cover in Delhi, 1999–2018



Note: Based on satellite images of Delhi for 1999, 2011 and 2018
Source: NIUA-SHLC Team, 2019

As a result of urban expansion, Delhi's municipal boundaries have gradually coalesced into neighbouring cities – Ghaziabad in the east, Noida in the south east, Faridabad in the south and Gurgaon in the south west – where relatively cheaper land is available for real estate, business and industrial development. Owing to these overlaps, the region enjoys improved inter-city commuter networks via road and metro rail.

Internal structure: a ward-level analysis

Like many other metropolitan cities in India, Delhi experienced a sharp decline in its population growth during 2001–2011, falling from an annual rate of 4.2% growth in 1991–2001 to 2.4% in 2001–2011. However, this was largely experienced in the core areas of the city, where the population declined in parallel to a corresponding increase in the peripheries. In 2011, for example, the growth rate in the core area was only 1.08% compared to 5.71% in the peripheries.

To understand inequities at ward level, it is crucial to have a contextual overview of the governance structure of Delhi. Since Delhi's city boundaries are coterminous with that of Delhi as a state, there is a two-tier elected governance structure in place — one operating through state legislature and the other through Municipal Corporations. Each controls a different set of public services. Being a special union territory, Delhi is also administered by the President of India through the Lieutenant Governor. But, at the local level, Delhi is governed by five Urban Local Bodies (ULBs), each of which handle civic services in the wards that come under their respective jurisdiction. The entire NCTD is divided into 289 wards.

In terms of accessibility to basic amenities (or 'fundamental services') such as access to tap water, toilets and drainage, there are notable inequalities between the various ULBs. However, in the case of higher-order amenities such as access to treated tap water, access to water within premises and piped sewerage, we have observed a high degree of disparity within ULBs. This is mainly due to vast size of ULBs and in their level of infrastructural development. For instance, both North and South Delhi Municipal Corporations (NDMC and SDMC) contain planned wards that enjoy excellent services as well as urban/rural villages, slums and resettlement colonies that lack the same higher-order amenities.

Our analysis reveals that the planned central wards of NDMC and SDMC are highly developed in comparison to the peripheral wards within these ULBs. An inter-ULB comparison shows a high share of rental housing in SDMC, where planned colonies and urban villages provide rental housing to professionals and students, respectively. In contrast, East Delhi Municipal Corporations (EDMC) has notably fewer rental housing and instead is dominated by self-occupied houses for lower – and middle-income households.

Neighbourhood analysis

Being the capital city, Delhi is facilitated by comparatively better public health and educational services as compared to other cities in India. However, these services are highly differentiated in terms of their user group and quality of service delivery.

The city's historical core, popularly known as 'Old Delhi', dates back to the mid-17th century and still contains architectural remnants of the Mughal period in the form of forts, mosques and havelis (mansions). From the 19th century onwards, this area has been transformed into a commercial and wholesale market zone, thus many of its original characteristics have been lost. In parallel, new types of neighbourhoods that vary in both socioeconomic composition and legal status have emerged.

Of the total residential area in the city as a whole, only a quarter can be classified as being 'planned'. Unauthorised and unplanned colonies make up the larger share and are built on land which, according to the Master Plan of Delhi 2001–2021, is not designated for residential purposes. In addition to this, Delhi also contains urban villages located in inner-city areas and rural villages at its periphery. It is also important to note how these different housing typologies reflect deep economic stratifications within society. For example, planned colonies are inhabited by affluent populations, whilst rural and urban villages are dominated by land-owning communities who provide rental accommodation to students and migrant populations. Resettlement colonies and slum housing, on the other hand, accommodate the urban poor and those at the lower end of the income scale.

A comparative analysis of the different neighbourhood typologies shows that planned neighbourhoods enjoy safer and more spacious housing conditions along with better access to infrastructural facilities. This is in stark contrast to unauthorised and resettlement colonies where access to basic amenities such as a reliable water supply (in terms of quality and frequency) is an everyday problem. Urban and rural villages also suffer inadequate water coverage and largely depend on non-municipal sources like bore-wells and hand-pumps.

In terms of legal status, apart from planned and resettlement colonies, residents of all other neighbourhoods lack security of land tenure or legal ownership to land. This reveals how economic precarity is directly tied to precarity of housing and other forms of social (in)security. Though the plot owners of unauthorised colonies originally purchased their land, they do not possess any formal ownership rights. Similarly, land owners in urban and rural villages have certificates issued by the respective Municipal Corporation but they do not possess legal deeds. Such ambiguities pertaining to land and property rights also cross over into laws around building construction. For example, it remains an issue that rural and urban villages are exempt from all building bylaws.

Being the capital city, Delhi is facilitated by comparatively better public health and educational services as compared to other cities in India. However, these services are highly differentiated in terms of their user group. While affluent populations in planned colonies prefer private healthcare and education, residents of resettlement colonies, rural villages and slums heavily depend on government-run healthcare and education facilities. Public transportation remains a major challenge in peripheral neighbourhoods. With the exception of planned areas, all other neighbourhoods are deprived of social and recreational infrastructures such as parks, playgrounds and green spaces.

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Way forward

This study reveals increasing disparity and diverse patterns of urban development that have shaped the Indian capital thus far.

Despite various urban development initiatives and programmes undertaken by both federal and state government, Delhi is yet to become a sustainable and inclusive city. The new Master Plan of Delhi 2041, which is the vision document for the city for the next 20 years, is based on the core principle of sustainability, inclusivity and equity. While the new plan aims to establish the potential of the city as a global economic powerhouse and cultural hub, it should also focus on reducing spatial inequalities in terms of adequate housing, access to essential amenities and civic services across neighbourhoods within various ULBs.

This paper summarises key findings of a report on the city as part of an international comparative study coordinated by the Centre for Sustainable, Healthy and Learning Cities and Neighbourhoods (SHLC). The wider study examines urbanisation and sustainable development in 14 cities in Africa and Asia and this part explores patterns of neighbourhood distribution and changing socio-spatial structures in response to recent urban expansion and migration. Geographic information system (GIS) data and remote sensing image analysis have been used to explore land-use changes and urban sprawl at city level and official statistics such as the population census and other secondary data have been used to map internal structural changes.

²<https://censusindia.co.in/states/delhi>

³<http://glovis.usgs.gov>

⁴https://www.chintan-india.org/themes/nexus/assets/images/delhi_master_plan_2021.pdf

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SHLC aims to strengthen capacity to address urban, health and education challenges in fast growing cities across Africa and Asia. SHLC is an international consortium of nine research partners, as follows: University of Glasgow, Human Sciences Research Council, Khulna University, Nankai University, National Institute of Urban Affairs, University of the Philippines Diliman, University of Rwanda and the University of Witwatersrand.

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