

EXPLORING AND ANALYSING THE DRIVERS OF URBAN SPRAWL IN PAKISTAN: A CASE STUDY OF LAHORE

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TABLE OF CONTENTS

INTRODUCTION	1
RESEARCH METHODS	3
1.1 Unit of Investigation (Study Area)	3
1.2 Methods for Data Collection and Data Analysis.....	3
1.2.1. Methods for Data Collection	3
1.2.2. Methods of Data Analysis.....	4
HISTORY OF URBANIZATION IN LAHORE.....	5
2.1 Urbanization in Pre-colonial Lahore	5
2.2 Urbanization in Colonial Lahore	7
2.3 Urbanization in Post-colonial Lahore.....	11
DEFINITION AND MEASURES OR SCALES OF URBAN SPRAWL	13
3.1 Definition of Urban Sprawl	13
3.2 Measures or Scales of Urban Sprawl.....	15
URBAN SPRAWL IN LAHORE.....	17
4.1 Conversion of a Large Amount of Agricultural Land to Urban Development	17
4.2 Density (Both Population and Built-up).....	19
4.3 Patterns of Development	22
4.4 Single-use Zoning or Segregation of Land Uses.....	27
4.5 Accessibility and Modes of Transportation (The Auto-Dependent Landscape)	28
CONCEPT, DEFINITION, AND HIERARCHY (LEVELS/CADRES/SERVICES) OF BUREAUCRACY..	31
5.1 Concept and Definition of Bureaucracy	31
5.2 Hierarchy (Levels/Cadres/Services) of Bureaucracy	32
ROLE OF BUREAUCRACY IN URBAN SPRAWL IN LAHORE	33
6.1 Absence of a Single or Central Regulatory Body.....	33
6.2 Public Policy for Land Use Zoning and Building Bylaws.....	35
6.2.1. The “Garden City” Approach.....	36
6.2.2. Land Use Zoning and Building Bylaws	36
6.2.3. Sprawled Houses and Offices	39
6.2.4. Prime State Land Reserved for Stadiums, Training Academies, and Other Luxuries.....	39
6.2.5. Gifts of Land for Government Officials in New Developments	39
6.3 Taxation Policy for Land Development and Real Estate	40
6.4 Transportation and Road Network Policy.....	40
THE ADMINISTRATIVE JURISDICTIONS OF ADMINISTRATIVE AGENCIES AND BODIES.....	42

7.1 Lahore Improvement Trust (LIT).....	43
7.1.1. Reasons for the Creation of Town Improvement Trusts	43
7.1.2. A History of the Creation of Town Improvement Trusts and their Functions.....	43
7.1.3. Establishment of Lahore Improvement Trust (LIT)	43
7.1.4. Organisational Structure of LIT.....	45
7.1.5. The Ultimate Fate of LIT.....	45
7.2 Lahore Development Authority (LDA).....	46
7.2.1. Reasons for the Creation of LDA.....	46
7.2.2. Creation of LDA.....	47
7.2.3. Organisational Structure of LDA.....	47
7.2.4. LDA as an Institution and its Jurisdiction	47
7.3 Metropolitan Corporation Lahore (MCL).....	48
7.3.3. MCL and LDA as Parallel Structures: Conflict over Jurisdiction	49
7.4 Lahore Cantonment Board (LCB).....	50
7.5 Defence Housing Authority (DHA).....	51
7.5.1. A History of the Creation of DHA.....	51
7.5.2. Purposes or Functions of DHA.....	51
CONCLUSION.....	52
REFERENCES.....	56

INTRODUCTION

Rapid urban growth is a worldwide phenomenon and Pakistan is no exception to it whose growth rate is around 2.7 percent, which is considered very high. This is manifested from the fact that its urban population between the first census (1951) and the last census (2017) has increased from 17.7 percent to 36.4 percent. This expansion of the cities is taking place outside their municipal boundaries, which is validated by the fact that the urban growth in the country has encroached upon 77,000 hectares of agricultural land between 2000 and 2010—most of it was prime agricultural land. This pattern of urban expansion outside the boundaries of the municipal corporations is posing serious threats to the capacity of providing basic amenities of modern life and is hazardous to sustainable growth. It is leaving multiple impacts on the environment, economy and society. The plight of Pakistan's most populated cities – Karachi and Lahore – is reflected from the Mercer Quality of Living Index of 2016, where Karachi and Lahore are ranked 202 and 199 respectively out of 230 cities.

Lahore, the second-largest city of Pakistan, hosts 11.12 million people in 1.758 million houses in an area of 1,772 square kilometers and has a population density of 391 persons per hectare. Further breakup of population density shows that about 10 percent of the area of Lahore city has an average population density of 860 persons per hectare while the rest of 90 percent area has relatively lower density of 400 persons per hectare. The percentage of low density areas has increased from 48 percent to 58 percent, the percentage of medium density and high density has decreased from 36 percent to 34 percent and from 16 percent to 8 percent respectively between 2005 and 2015. This implies that Lahore is experiencing rapid urbanisation, which is manifested from the fact that Lahore's annual average urban extension rate went up from three percent between 1991 and 2000 to nearly four percent between 2000 and 2013 while world's average urban extension rate declined from 6 percent between 1991 and 2000 to nearly 4 percent between 2000 and 2013. This tells one of several stories of urban sprawl in Lahore.

The foregoing debate raises an important puzzle: “whether Lahore is sprawling or a compact city? If the sprawl is occurring, how?” Secondly, “what is role of bureaucracy in suburban sprawl in Lahore?”

The question is answered by collecting data (e.g., regulations, zoning codes, policies, and master plans for urban development and statistics about population, density, households, urban area, and vehicles) from the records of various government departments and organizations (Lahore Development Authority—LDA, Metropolitan Corporation Lahore—MCL, Defence Housing Authority—DHA, Lahore Cantonment Board—LCB, Cooperative Housing Societies—CHS, Tehsil Municipal Administration—TMA, Local Government—LG, Statistical/Census Department, Excise and Taxation Department, the Punjab Urban Unit, etc.), public and private real estate developers and international organisations (World Bank—WB, Food and Agricultural Organisation—FAO, International Monetary Bank—IMF, etc.). In addition to this, long and recurrent discussions were held with the urban planners and analysts, senior bureaucrats who had worked in Lahore during their service/employment, officials from the Urban Unit, LDA, MCL, DHA, LCB, CHS, TMA, and LG, and public and private real estate developers.

The collected data is analysed through directed content analysis—one of the three distinct techniques of qualitative content analysis; the other two are summative and conventional. In the directed technique of content analysis, the academics start their research from an already existing theory or prior research findings, with a goal of rejecting, validating or extending it. This method is categorised as a deductive use of theoretical conception or research findings. This research project aims at testifying the findings of a host of urban policy experts/analysts who hold that bureaucracy – which plays a key role in devising and implementing master plans, policies, zoning codes, and regulations – is one of the leading actors who are causing urban sprawl in Lahore. Interestingly, the findings of this research project, as is evident from the concluding part, endorse their standing. The findings of this research project are divided into two parts: the first deals with the measures to gauge urban sprawl in Lahore while the second explores and analyses the role of

bureaucracy in urban sprawl in Lahore. Following are the findings of measures gauging urban sprawl in Lahore.

There has been a rapid conversion of large swathes of agricultural land to urban development in Lahore, causing swift increase in the number of housing societies – many of which as gated communities – at the outskirts of Lahore. As a result, there was a massive expansion of real estate market in the city particularly since the 1990s. The whole process was resulting in extensions of the scattered housing societies on the one hand and vacant plots on the other.

Population density is high at the center and it starts decreasing with the increase in distance from the Central Business District (CBD)—the city center (Gulberg). The density within the radius of 14 kilometer of the CBD is more than 150 persons per hectare while it is less than 150 persons per hectare beyond 14 kilometers. In the same vein, 24.38 per cent, 59.13 per cent, and 16.49 per cent of the total population is residing within the radius of 0–5 kilometers, 5–14 kilometer, and 14–38 kilometer from the CBD, respectively. High density in the center and low-density at the peripheral areas suggest that the city is sprawling on its fringes.

584.20 per cent population increase whereas 584.20 per cent built-up area increase between 1966 and 2017 clearly indicate urban sprawl in Lahore, where the percentage of built-up area growth was more than percentage of population growth.

The initial growth of the city was circular within a radius of 0–5 km. From 1980 to 2000, the pattern of urban growth was contiguous within the radius of 15–20 km, whereas during the last couple of decades, the growth pattern has turned into radial-cum-linear that is scattered at periphery attaining the form of multi-nuclei city. In other words, rapid but scattered growth has occurred along its major arteries i.e. Raiwind Road, Ferozpur Road, Grand Trunk Road, and Multan Road/Canal Road up to the radius of 20–35 kilometer.

Lahore has been practicing land-use zoning codes and building bylaws which encourage single land-use zoning, single-family home, and horizontal expansion on the one hand whereas discourage mixed-use zoning, multi-family homes, and vertical growth on the other—high rise buildings are banned for commercial and residential use). Therefore, Lahore does not have a downtown or city center—the dense areas with mixed-use buildings (residential, office, commercial, and entertainment) within an almost walkable reach. Subsequently, it is falling victim to urban sprawl.

Lahore's existing public transport system is insufficient to meet the travel demand of the peripheral residents. Consequently, the demand for personal cars and private vehicles (mainly two-wheelers) despite price hikes, supply chain hiccups, economic recessions, and other issues, has been surging. The rise has been exponential, especially in the previous few years. According to Pakistan Economic Survey (PES), approximately 1,977,704 cars got registered between 2012 and 2021; out of which, 812,204 were registered in Lahore only. Whereas, during the same period, 4.2 million vehicles (cars, two wheelers, and three wheelers) were registered in Lahore, according to the Motor Registration Authority of the Punjab Excise and Taxation Department.

Our research findings identify that Lahore's urban expansion has been a mess, the city has been sprawling. There are multiple factors for this unwanted urban sprawl yet bureaucracy is leading from the front as is evident from the following facts and figures.

The administration of Lahore city is fragmented, comprising the Lahore Development Authority (LDA), the Metropolitan Corporation Lahore (MCL), and the Lahore Cantonment Board (LCB) and the Defence Housing Authority (DHA). Apart from this, other institutions that are involved in housing development specifically are the Cooperative Housing Societies (CHS) and the private sector. Therefore, Lahore is governed by a combination of various local, provincial, and federal agencies that undertake a variety of responsibilities, from urban growth management to infrastructure development, and maintenance to creation of new towns. These multiple agencies, instead of strengthening, weaken the governing structure owing to the overlapping responsibilities and administration areas.

Generally speaking, there are five ways through which inefficient use of land is ensured or guaranteed, which, in turn, eats up a large chunk of land for minimum accommodation and causes sprawling in Lahore: 1) the “Garden City” approach; 2) land use zoning—single land-use zoning is preferred over mixed land-use zoning, and building bylaws—horizontal expansion over vertical development is preferred; 3) sprawled houses and offices for civil servants, judges, and army officials in the city center; 4) prime state land reserved for stadiums, training academies, and other luxuries; and 5) gifts of land for government officials in new developments.

Current taxation policy for land development and real estate favours land developers and real estate tycoons. This, in turn, causes sprawl. For example, in most of the schemes in Lahore, more than half of the plots are inbuilt because bylaws are very flexible and owners of vacant plots have no fear of cancellation and they consider this investment a better safeguard against inflation. Moreover, speculators invest their money in the plots because no cost/taxes are involved in the keeping of vacant plots. Contrary to housing properties, commercialization is heavily taxed and the process is complicated.

Primarily, automobiles are permitting access to remote areas and providing the essential condition which allows sprawl to occur. The use of cars and two-wheelers has been facilitated at the expense of other forms of transport such as bicycles, walking, taxis, and buses. With cars and two-wheelers so subsidized, it is not hard to see why the sprawl is spreading.

RESEARCH METHODS

1.1 Unit of Investigation (Study Area)

There has been tendency among the researchers to study and measure urban sprawl either on a metropolitan scale, as mostly in the US (Ewing, Pendall, and Chen 2002; Razin and Rosentraub 2000; Wolman et al. 2004)—Bhatti and his colleagues have studied Lahore at metropolitan level (Bhatti et al. 2015), or on smaller scales of towns or neighborhoods, mostly used in Europe (Batty and Longley 1994; Burton 2000; Hasse and Lathrop 2003)—Nadeem and his colleagues have studied Lahore at union council level (Nadeem et al. 2021). Instead of choosing study on a metropolitan scale or a town scale, we preferred to choose to study urban sprawl on a city scale. This decision was based on the availability of the data used in our study, as well as on the length of time scale i.e., between 1947 and 2022.

1.2 Methods for Data Collection and Data Analysis

1.2.1. Methods for Data Collection

For this proposed research project, the data (e.g., regulations, zoning codes, policies and master plans for urban development and statistics about population, density, households, urban area, and vehicles) was collected from the records of various government departments and organizations (Lahore Development Authority—LDA, Metropolitan Corporation Lahore—MCL, Defence Housing Authority—DHA, Lahore Cantonment Board—LCB, Cooperative Housing Societies—CHS, Tehsil Municipal Administration—TMA, Revenue Department, Local Government—LG, Punjab Assembly, Statistical/Census Department, Excise and Taxation Department, the Punjab Urban Unit, etc.), public and private real estate developers and national and international organisations (World Bank—WB, Food and Agricultural Organisation—FAO, International Monetary Bank—IMF, etc.). In addition to this, long and recurrent discussions were held with the urban planners and analysts, senior bureaucrats who had worked in Lahore during their service/employment, officials from the Urban Unit, LDA, MCL, DHA, LCB, CHS, TMA, and LG, and public and private real estate developers.

1.2.2. Methods of Data Analysis

Directed content analysis was applied to analyse the data collected through archival research for this research project.

1.2.2.1. DIRECTED CONTENT ANALYSIS APPROACH

The collected data was analysed through directed content analysis—one of the three distinct techniques of qualitative content analysis; the other two are summative and conventional. Table 1 outlines conventional, directed and summative types of content analysis, which differ from one another in terms of coding schemes, origins of codes, and threats to trustworthiness (Shannon and Hsieh 2005).

Table 1. Differences Among Three Approaches of Content Analysis

Type of Content Analysis	Study Starts With	Timing of Defining Codes or Keywords	Source of Codes or Keywords
<i>Conventional</i>	Observation	Codes are defined during data analysis	Codes are derived from data
<i>Directed</i>	Theory or Research Findings	Codes are defined before and during data analysis	Codes are derived from theory or relevant research findings
<i>Summative</i>	Keywords	Keywords are identified before and during data analysis	Keywords are derived from interest of researchers or review of literature

The directed technique of content analysis starts research study from an already existing theory or prior research findings, with a goal of rejecting, validating or extending it. This method is categorised as a deductive use of theoretical conception or research findings (Potter and Levine-Donnerstein 1999). Prevailing theoretical framework or research outcomes may offer forecasts about the variables of interest or about the relationships among variables. This way, it helps in defining the preliminary coding structure or relationships between codes (Mayring 2021). Thus, academics start their research by pinpointing major theories or variables as initial coding sets (Potter and Levine-Donnerstein 1999). The findings from a directed content analysis “either offer a contradictory view of the phenomenon or might further refine, extend, and enrich the theory or the research” (Shannon and Hsieh 2005). Therefore, this research project aims at testifying the findings of a host of urban policy experts/analysts (Razin 1998; Anthony 2004; Hull 2012; Haque 2014a, 2014b, 2015; PIDE 2020) who hold that bureaucracy – which plays a key role in devising and implementing master plans, policies, zoning codes, and regulations – is one of the leading actors who are causing urban sprawl. Interestingly, the findings of this research project, as is evident from the concluding part, endorse their standing.

This research report comprises six sections. The first part explores and analyses the history of urbanization in Lahore i.e. pre-colonial, colonial, and post-colonial. In the second unit, an effort is made at defining the phenomenon of urban sprawl and determining its measures to gauge the urban growth or development as compact or sprawl. Then, these determined scales are applied on the urbanization in Lahore to measure whether the city is sprawling or not. In the next section, the concept and definition of bureaucracy is discussed in detail. While in the fifth part, an attempt is made to explore and analyse the role of bureaucracy in urban sprawl in Lahore. The final unit deals with the administrative jurisdictions of the different agencies (Lahore Improvement Trust—LIT, LDA, MCL, TMA, DHA, and LCB).

HISTORY OF URBANIZATION IN LAHORE

History of urbanization in Lahore, broadly speaking, is divided into three parts: 1) pre-colonial; 2) colonial; and 3) post-colonial.

2.1 Urbanization in Pre-colonial Lahore

Lahore had enjoyed immense attention under many dynasties that ruled in India over the centuries, but these came in phases of ebbs and flows under different circumstances. Before the colonial occupation in 1849, Lahore had been the provincial capital of the Delhi Sultanate (1206–1526) and the Mughal Empire (1526–1799), and then, the capital of the Sikh kingdom (1799–1849). While its history can be accurately mapped from the seventh century, certain references can be found to a settlement at the location of Lahore as far back as the first century (Latif 1892). It was however under the Mughals that the city gained most prominence. The Mughals constructed gardens and forts taking it to the heights of glory and grandeur (Rana and Bhatti 2018).

Under the Mughals, Lahore enjoyed most attention during the time of Akbar's reign beginning in the mid-16th century. Akbar transferred his capital to Lahore in 1584 and built a fort atop the old Lahore citadel.¹ This resulted in increased interest in developing the monumental architecture of the city for the Mughals. It continued to enjoy patronage under the likes of Shah Jahan, who remodeled the fort, and Aurangzeb, who was responsible for the construction of the Badshahi Mosque amongst other such monumental structures. Besides the increased activity in the construction of these monumental structures, the city itself thrived immensely under the Mughal administration (Goulding 1924). But because Lahore was essentially a "Mogul city," the city itself seems to have spanned far longer than its extents in the mid-eighteenth century. This is evidenced from the remnants and ruins of structures in the environs of the city that extended up to three miles beyond the city limits in Akbar's times:

...among the debris, of numerous small wells, such as are constructed in the private dwelling-houses of a closely-packed city and from the position of the large ruined mosque on the right-hand side of the Amritsar road, known as the Idgah, or place of assembly upon Muhammeden feast-days. These buildings are almost always erected in the immediate outskirts of a town; it may be inferred, therefore, that when this mosque was built the city extended as far as its immediate vicinity; but the city is now nearly three miles off... (Goulding 1924, 83).

However, beyond Shah Jahan's reign and up until the rise of Sikh power in Punjab in the last quarter of the eighteenth century, Lahore lost the heightened patronage it had enjoyed in the sixteenth and seventeenth centuries (Abbas 2021; Aijazuddin 2004).

The times under the numerous Sikh rulers after the Mughals lost control of the city in the 1770's are portrayed as grim times for the city. The subsequent administrators of Lahore, a long string of Sikh rulers, did not contribute to the city's infrastructure in the same manner as the Mughals and thus is registered to be the time when the city's infrastructure started degrading (Malik 2014). This is recorded as "Sudden inheritors of some of the finest examples of Mughal architecture, they treated these monuments with all the negligence recipients of an unexpected windfall might—they despoiled whatever took their fancy and discarded or neglected the rest. Lahore never recovered from the assault" (Aijazuddin 2004, 14)." This demonstrates the damage of the larger monumental architecture of the city; however, the city and its population itself did suffer somewhat in these times. Lahore was a city where the population thrived, particularly the

¹ Some historians suggest that Akbar had shifted his capital to Lahore in order to crush the rebellion of Abdullah Bhatti alias Dulla Bhatti, his father, and grandfather (for details, see Abbas 2020).

artisan class, due to the patronage of the ruling or elite population. During times of political turbulence, this patronage was obviously affected, leaving a hurting economy with dire effects on the local population (Malik 2014).

This followed the establishment of an independent government in Lahore by Ranjit Singh in 1799. While Singh had no aspirations to build at an imperial scale similar to the Mughals, there was still a general sense of improvement in the physical conditions of the city under his rule. Political stability in the city brought with it a rise in commerce and trade, allowing for the residents of the city to see better prospects than that of the last three decades of the eighteenth century. However, despite a surge of (re)construction within the city of Lahore, its extents remained largely contained within the boundaries of the Walled City. Most large-scale structures (e.g., Nau Nehal Singh Haveli and Wazir Dhayan Singh Haveli) were constructed within the extents of the Walled City, whereas gardens and country estates were spread outside the city, mainly on the route towards Shalimar Garden (Aijazuddin 2004, 16). This observation stands true when we look at an 1846 map of Lahore, one of the earliest detailed surveys of the city by the British (for details, see Figure 1). One can note the presence of initial British cantonments in Anarkali, immediately south of the Walled City. These barracks had been established about the time of this map being drawn, before Lahore's annexation into British rule in 1849. This proximity to the Walled City of Lahore in the form of a Cantonment was strategically obvious, since the purpose of the army stationed in the city at that point was to control it as a military force (Malik 2014).

Figure 1: 1846 Map of Lahore Shows British Cantonment Stationed at Anarkali



(Source: Rehman 2013)

This map allows us to consider the extents of the city of Lahore and its environs that it considered to be part of one geographic unit. The River Ravi forms the Western edge of this unit, whereas the Eastern edge cuts off at Shalimar Garden, which is the most imposing man-made feature after the Walled City itself. Numerous garden estates are documented on the road that connects the Walled City to the Shalimar Garden, which was eventually converted into the Grand Trunk Road under the British administration. One can observe here that most agricultural land was located to the North and West of the Walled City, due to the course of the Ravi River and fertility of its floodplains. To the south and southeast of the city, however, are very few villages or gardens, and the landscape has been given a contoured texture to possibly represent non-irrigated land due to the irregular terrain. This was the Lahore that the British occupied in 1849, and which they would transform incredibly over the course of half a century: a city contained within its own walls, flanked on three sides with scattered garden estates and agricultural land (Rehman 2013; Malik 2014).

2.2 Urbanization in Colonial Lahore

When the British annexed Punjab in 1849, Lahore was not the same as it was in the seventeenth century—this is evidently recorded by the local historians and the British travelling through the city. They hold that precolonial glory of olden Lahore had faded, which, the British, later on, tried to restore or reinstate—making a better and modern city (Rana and Bhatti 2018). Most of the growth occurred towards southeast of the Walled City, which focused on developing civil lines/station, housing, colleges, schools, and gardens. An army cantonment plan was laid out that still echoes the garden city concept (Groote et al. 1989). Coupled with this, a variety of housing infrastructure such as government quarters, officer’s colonies, and administrative buildings were constructed, which are still being used by the government employees (Rana and Bhatti 2018).

Beginning with William Glover who argues that the Sikh and eventually the British administration “adopted and altered” what he calls a durable physical template for all later developments as provided by the Mughals. He believes this to be true despite acknowledging that the documents detailing urban development under the British administration “seldom conceptualized” it to be so. He uses the example of suburbanization that the Mughals established under their rule to link to the selection of building by the British administration (Glover 2008, 17-18). We know from the 1846 map that the Sikh period continued to build on the tradition of the Mughals in constructing garden estates in the outskirts of the city; a rather large number of these gardens have been recorded on the map and seem to have continued to occupy a lot of attention from British cartographers for a while until the infrastructure of the city took precedence by virtue of its growth and replacement by British designed garden spaces (Rehman 2013; Malik 2014).

It may be plausible to establish a link between Mughal and British usage of specific sort of structures for their civic administration, especially since the British actually drafted a lot of Mughal and Sikh buildings for their own administrative purposes. Further, they did develop suburban pockets in the outskirts of the city rather than within the established city limits in the nineteenth century. However, it can be argued that this was not as much due to the physical template provided by the Mughals, as it had to do with the colonial administration’s own very need for a distinct spatial presence, as can be documented in Anthony King’s work, “Colonial Urban Development” (King 1976). Additionally, the only historical aspect the colonial administration wished to associate itself with was the monumentality, and the power that it reflected. The local traditional patterns of living were thus almost unregistered in the early days of colonial presence in the city.

The high-density settlements of the old quarters of Lahore necessitated that most urban development would take place in the outer edges of the city. The shifting of the Cantonment from Anarkali, near the Walled City, to Mian Mir in the far eastern suburbs was however a definitive step in the way Lahore was to be conceptualized from thereon. This separation between the colonial-military apparatus and the old fortified city marked a very stark contrast between the two. These two were connected together by a civil corridor, a wide road—the Mall, which would run from the southern edge of the Walled City to feed into the Cantonment from the western side. The walls around the Walled City managed to survive through numerous British interventions, but the moat around was transformed into circular gardens, so as to slightly neutralize the fortification of the Walled City against the new space representing military strength in the form of order and rational design (Malik 2014).

Figure 2: 1867 Map of Lahore shows Mian Mir Cantonment had been laid out; canal had been constructed; railway network had been established; Mall Road had been constructed; new green spaces had been created; and walls around old city were still intact but moat had been removed to make space for Circular Gardens



(Source: Rehman 2013).

Figure 2 shows a map of Lahore in 1867, which marks the transformation of the city very vividly. The Cantonment, which was constructed on a strict north-south axis, stands strongly in contrast to the Walled City. Cartographically speaking, the location of the Cantonment so further out to the East meant that the Walled City of Lahore was pushed to the edge of the geographic area represented. While the city was still vertically positioned somewhat in the center, the strict ordered layout and the rather magnificent size of the Cantonment meant that there was an obvious weakening in its position of the city visually. Gardens were highlighted in a bright green, that depict both surviving Mughal and Sikh gardens, but also highlight the Circular Gardens and the Lawrence Gardens, both British contributions to the city. The placement of the Cantonment also necessitated the construction of a canal, which was upgraded by the British in 1861 to serve the Cantonment, and was extended from the Bambawali-Ravi-Bedian (BRB) Canal further east to the city, hugging the current border of India and Pakistan. It also served as a very direct point of division between the old and the new city. Access was possible through the Mall Road, and was supported through two other major roads: Jail Road and Mayo Road. Restricted access further contributed to the exclusivity of the Cantonment. Two railways had also been laid out by the time and culminated in the newly constructed Railway Station, which was modeled to act as a Fortress in case of political unrest. While most architectural and infrastructural interventions had already been made before the rebellion of 1857, its aftermath supported the development of moves like these, in order to allow the British authorities to assert their dominance while also acting as strategic elements for military oppression, if needed (Rehman 2013; Malik 2014).

Whereas the Canal could arguably be pinned as a physical separation between the two area (the old city and the new city), the Civil Station operated as social buffer between the two. By the turn of the twentieth century, this was where most administrative buildings would be housed, as would be other civic buildings such as colleges, universities, hotels, and hospitals (for details, see Figure 3). The Mall Road too played an important part in molding a distinctive spatial identity for the old and the new city. While it acted as the main connection between the old city and the Cantonment. Lt. Colonel Napier, who aligned the Mall Road in 1851, described it as a “direct road from Anarkali to Mian Mir” (Aijazuddin 2004; Malik 2014).²

Figure 3: Lahore’s Civil Station, circa 1900

² The Mall was also generally divided into two parts, Upper Mall and Lower Mall. Lower Mall represented the length of the Mall that was ran on the North-South axis, and existed prior to the construction of this connection to Mian Mir.



(Source: Glover 2008)

By the turn of the twentieth century, thus, a very distinct ‘colonial spatial imagination’ had been applied all over the city—and was almost oblivious to the traditional settlements of the city. This was exemplified in the kind of buildings that were constructed, and the new typologies that were created by the introduction of different functions: “factories, hospitals, prisons, lunatic asylums, clubs and racecourses, parks, arboretums, zoos, hotels, courthouses, museums, universities, cinema halls, gymnasiums” (Glover 2008, xiii). These buildings were constructed with newer materials that were now more readily available due to better infrastructure in the form of roads and railway lines. These thus allowed for newer kinds of standards to be introduced, and eventually, formalized through institutionalized setups such as the municipality. Most importantly, however, as Glover points out: “Urban governance was institutionalized in the form of a ‘municipality’ and effected through new regimes of record keeping and surveillance, new ways of classifying people and property” (Glover 2008, xiii). Not only was the physical morphology of the city radically altered and sorted into a sort of a hierarchical order, these changes brought with them a very different sense of what it meant to be a resident of the city and how one could move around in the city (for details, see Figure 4).

Figure 4: 1907 Map of Lahore Shows Expansion of Civil Station and More Visible Colonial Infrastructure



(Source: Malik 2014)

After Cantonment, Model Town³ has been one of the major urban developments mainly in twentieth-century colonial Lahore. It marks several aspects in the changing nature of Lahore's urban development, but also in terms of what it meant to lead an urban modern way of life and the spatial apparatus that could be employed to manifest it. Model Town was developed on a large tract of land that was located five miles south-east of Anarkali and three miles from the boundary of the Lahore Municipality (Aijazuddin 2004, 206).⁴ In Model Town, "Each house would be detached from the others and would be built Bungalow-like with some garden around it" (Tandon 1969, 236). This kind of development suited most members of the society who were professionals working under the colonial government, and were nearing retirement, which meant that they would then have to vacate their government appointed bungalows (Tandon 1969, 239).

In terms of two rather self-contained and closed spatial orders, the Cantonment and the Model Town considered together offer us a strong clue towards the trajectory Lahore's urban development took in the first half of the twentieth century. The Cantonment provided the strictly ordered layout that offered the framework for and standards of modern urban development. The Civil Station, by virtue of unmarked boundaries, was unable to perform the same function. It did however provide the low-density template for the housing typology in the form of a bungalow, along with providing a buffer space between the space of power (the Cantonment) and the space of subject (the Old city). The Model Town emulated, and perhaps even legitimized, this colonial typology by adapting it as its preferred model that was further replicated in the Garden City inspired layout. In doing so, it brought together both the exclusivity and modernity that the Cantonment and the Civil Station designed for the military and civil administrative staff to the local population, which was however unfortunately decidedly aimed for the upper middle class (Malik 2014).

In addition to Cantonment and Model Town, three individual projects – Rifle Range Scheme, Misri Shah Scheme (now Shadbagh), and Poonch Road Scheme (now Samanabad) – were undertaken by the Lahore Improvement Trust (LIT) in its formative years.⁵ These were the first three projects that the Trust started work on in 1939, the year when it started considering projects under the Punjab Town Improvement Act, 1922, and occupied most attention in the annual reports. These were repeatedly touted as the flagship projects of the Trust, which would help the Trust to regulate its finances, help further clarify its objectives, and most importantly of all, bring recognition of the Trust's activities to the public and the government, something it seems to have been struggling with for most of its formative years (Government of Punjab 1942).

The Misri Shah Scheme, now known as Shadbagh, is most anomalous scheme in terms of its spatial layout. First proposed in 1939, it is the only residential scheme to have been proposed by the Trust, under the Punjab Town Improvement Act, that has a very distinct plan. It was undoubtedly inspired by Model Town's layout, which, in turn, had been heavily influenced by the Garden City model. Shaped like a horseshoe, five main streets led to the center of the scheme which, following the Model Town model, was a central park. This scheme was envisioned as a housing scheme and was connected to the main city in its South through an older settlement of Misri Shah, which is where it got its name (Malik 2014).

Similar to the Misri Shah scheme, the Poonch Road scheme (which was slowly expanded over the years to include more land, and which is now known as Samanabad) and the Rifle Range scheme were developed along the same lines. While these were not designed with the same self-enclosed spatial layout, they were nevertheless still reflective of the same design values and targeted the same privileged segment of the population. Considered within themselves, these schemes were

³ The idea of Model Town came from Dewan Khem Chand, a lawyer based in Lahore, in a note he published in January 1921.

⁴ 1963 acres of forest land was purchased from the Government at a cost of nine lakh rupees, but due to the intransigence of the Forest Department, it took two years before possession was finally handed over on 5 January 1923 to the new society, which had been formed as a company and registered under the Cooperative Societies Act.

⁵ All three were housing schemes designed for middle to upper middle classes. Plot sizes varied between 12 to 20 marlas.

perhaps somewhat considered successful, despite the initial reluctance of the public to acquire plots in them. But what they implied for Lahore's urban expansion and the details they adapted and standardized was not envisioned (Malik 2014).

Furthermore, two major schemes under the Trust, as proposed in the 1942 plan, included the proposed Shalimar Industrial Area and the University Area. These large schemes demonstrated the power the Trust yielded in terms of land acquisition, which was accorded to them under the Land Acquisition Act. Thus, the excuse that the Trust put forward so many times about the lack of land large enough to accommodate schemes that could have made a positive impact on the city is not valid, even if often employed. That the Trust chose to slowly rid itself of the very land it had acquired for the Shalimar Industrial area, and that it is now largely a high-density residential area, which seems to have developed very randomly over the years. That the density of this settlement is very high, certainly higher than that of the Trust's approved densities for either abadi or bungalow schemes, suggests that it is almost as if the Trust not only rid itself of the land but also excused itself from overseeing proper development within that area, which it could have pursued under the Punjab Municipal Act, 1911. The Trust's complicity in this matter is not only almost inexplicable but also points towards the misplaced priorities of the Trust and its methods of approaching them. More importantly, it highlights the selective nature of the Trust's operations, which is problematic considering the regulatory power it also held for the entire city limits (Malik 2014).

There were thus two distinct qualities to how Lahore was perceived. As a major center for many powerful dynasties before the arrival of the British, it was conceived as a city that was at one time a magnificent city, but which had now lost all its glory and had left behind squalid living quarters within the Walled City that were unfit for human habitation. It was the British who were now responsible for preservation of that lost heritage, and it was them who decided what was worthy of being preserved and what needed to be replaced. And then there was the Lahore that the British had constructed or co-opted, a modern Lahore. In this construction, it was spaces such as the Cantonment, the Civil Station and the Mall Road that figured almost exclusively. As the footprint of the physical interventions the British made in the city grew stronger and stronger, the local indigenous settlements and neighborhoods that not only existed in the Walled City but that had developed over time around the city environs organically were relegated more and more outside the dominant discourses of how the city was projected and planned for. The Model Town, in bringing housing settlements to the fore, still represented a very limited section of the society.

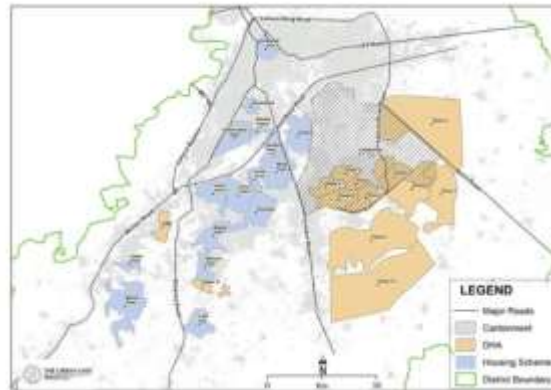
2.3 Urbanization in Post-colonial Lahore

The somewhat close proximity of schemes such as Gulberg, Model Town, Cantonment, and, to a certain extent, Samanabad, that were all located on the south and east sides of the city, restricted the development of low-income high-density areas to the northern and western edge of the city along Ravi, where the Walled City acted a pivot between these two axes. Thus, while Lahore's metropolitan area increased and was developed over the years following the Partition, it still limited low-income classes within a very restricted area. Over time, Lahore's lower classes have found themselves expanding on the western edge of the city, which keeps pushing to the south very linearly due to the restriction of River Ravi on its left. Further, development that was initiated in the form of projects like the Shahalmi scheme introduced land use in areas that were not designed or even feasible to accommodate them. A complete surgical operation within those areas to replace them entirely with the kind of development that the Trust introduced in the years following the Partition would probably have been a better solution, even if extremely damaging in terms of heritage protection. Unfortunately, haphazard and near-sighted efforts under the Trust created a mess of a situation within the older parts of the City. Proper urban development, or at least a major sizeable portion of it, was directed towards trends that favored the well-off classes of the city (Malik 2014).

Therefore, trends of urbanization in post-colonial Lahore, unlike pre-colonial and colonial Lahore, were altogether different. For example, the era between the 1950s and the 1970s was

dominated by government-led housing schemes such as Samanabad (1950), Gulberg (1952), Wahdat Colony (1958), Allama Iqbal Town and Township (1970s). However, since the 1980s, private sector led developments such as Bahria Town and those of the Defence Housing Authority (DHA) have dominated the south-western and eastern parts of Lahore (for details, see Figure 5) (Javed and Riaz 2020).

Figure 5: Prominent Housing Schemes of Lahore



(Source: The Urban Unit)

Shortly after independence, the first newly developed housing scheme after partition was Samanabad in 1950. The only aim of this scheme was to resolve a serious housing shortage caused by the major influx of immigrants. Samanabad was meant for low and middle-income households. Major developments occurred around the late 1960s, which is also when statistics report the highest population annual growth rate of 4.32 per cent between 1961 and 1972. The city grew along the south and southwest corridors of Ferozpur Road and Multan Road as is evident from Figure 5.⁶ Urbanization towards the east and west was limited by the Indian border and the river Ravi (Javed and Riaz 2020).

This trend of urbanization in Lahore did not remain intact but changed in 1975—the year marked the creation of the Lahore Development Authority (LDA), which spurred an era of private sector led and financed housing developments commonly known as ‘housing schemes’.⁷ LDA is the main government agency for developing housing schemes. So far LDA has self-developed around 43 schemes with approximately 123,000 residential plots and 3,400 commercial plots. A few examples of LDA’s government led developments are Gulberg, Garden Town, Faisal Town, Allama Iqbal Town, Johar Town, LDA Avenue, LDA City, and Jubilee Town. Some examples of private developments are Bahria Town, Lake City, Eden Housing, WAPDA Town, and Valencia Town, which are some of Lahore’s largest developments of the last three decades. LDA has approved around 241 private housing schemes and cooperatives, including 131,640 plots developed by the private sector (Javed and Riaz 2020).⁸

Apart from LDA, DHA—formerly an extension of the Lahore Cantonment Cooperative Housing Society (LCCHS),⁹ has developed and is developing an estimated total area of 158,709 Kanal across its nine phases to the east and southeast of Lahore (for details, see Figure 6). The mandate under which DHA operates is neither under provincial nor local government control; nonetheless, this federal authority is significantly shaping the urban fabric and eco-system of Lahore by building on major swaths of arable land. The area on which DHA stands today was apparently

⁶ Even though expansion continued to the south and southwest direction, development contiguously also occurred along the northwest of Lahore into the Sheikhpura district during the 1970s.

⁷ Lahore has housing schemes of varying sizes ranging from a few hectares to a couple of square kilometres.

⁸ The number of societies has risen to 372 and plots to 209,519 (Residential: 191,692; Commercial: 17827).

⁹ The cantonment was regarded as an exclusive area for the military, and residents were limited to military families and veterans; however, it now also houses the civilian population and private businesses.

restricted for development to preserve the green lands and to protect the Indian border to the east of Lahore (Javed and Riaz 2020).

Figure 6: Defence Housing Authority, Phase 6, Lahore



(Source: Javed and Riaz 2020)

The possible reasons for this boom in “housing societies” or “gated communities” (private housing construction and considerable speculation in land markets) can be: 1) the shift of local authorities’ focus from providing public housing and land plots toward building infrastructure and delivering services; 2) decrease in the share of urban development budget from 60 per cent in the 1960s to less than 20 per cent in the 1980s and increase in the share of utilities from less than 25 per cent to 40 per cent; 3) surge in remittances from Pakistani labour migrants to Gulf countries, and 4) and introduction of development authorities in the mid-1970s to support municipalities in their urban planning efforts (Muhammad A. Qadeer 1996; Ahmad and Anjum 2012; Qureshi and Li 2023).

DEFINITION AND MEASURES OR SCALES OF URBAN SPRAWL

This unit is divided into two parts: in the first section, the phenomenon of urban sprawl is defined while in the second unit, scales or measures of urban sprawl are determined to gauge or measure the urban development—sprawl or compact.

3.1 Definition of Urban Sprawl

To begin with, the term “sprawl—the tendency toward lower city densities as city footprints expand” was coined by Earle Draper, one of the first city planners in the United States, in 1937 (Black 1996; Nechyba and P. Walsh 2004). Following Draper, Jane Jacobs drew the attention towards ‘the inefficiency of the dispersed city model that was prospering in North America’. In her seminal work on peripheral and dispersed residential neighbourhoods, Jacobs argues that development took place together with heavy investment in highways designed to support a very large number of automobiles (Jacobs 1961). This dispersed city model destroys social and cultural life, leading to less creative and more dangerous environments.

Many academicians have attempted at defining urban sprawl. However, there is a huge dispute among them and urban planners on an acceptable uniform definition of this phenomenon. Its definitions are as varying, contesting, and perplexing as its causes and consequences. Therefore, there is no general agreement about what defines urban sprawl (Anthony 2004; Banai and DePriest 2014; Burchell et al. 1998; E. H. Wilson et al. 2003; Ewing, Pendall, and Chen 2002; Galster et al. 2001; Jaeger, Bertiller, Schwick, Cavens, et al. 2010; Johnson 2001; Malpezzi 1999). This, possibly, can be attributed to different professional and disciplinary orientations as a contributing factor. In the following passages, an effort is made at exploring and analyzing varying definitions of urban sprawl.

To begin with, Galster and colleagues (Galster et al. 2001; Wolman et al. 2004) and Squires (2002), while thoroughly reviewing the causes, consequences, processes, and characteristics of

urban sprawl are considered among the first contributors, who provided a definition that manages to encompass the complexity and multidimensionality of the phenomenon of urban sprawl.

Afterwards, many researchers and urban planners have attempted at defining urban sprawl. Many of them have emphasized on one or a few characteristics of the phenomenon: a hinter land or transition zone with indefinite borders between rural and urban areas (KARAKAYACI 2016); a leapfrog development (Gordon and Richardson 1997); a relatively low population per acre (Fulton et al. 2001; Lopez and Hynes 2003); an automobile-dependent (Brunner and Kaminski 2016; Lewyn 2005); a particular form rather than any form of suburban growth (Burchell et al. 1998); a condition in which population growth rates in the suburbs are higher than inside the central city (Jackson 1985); and an undesirable form of development, due to its economic, social and environmental disadvantages (Razin 1998). None of them could present or suggest a comprehensive definition of the phenomenon. On the other hand, they have also included its causes and consequences in its definition (Anthony 2004; Jaeger, Bertiller, Schwick, Cavens, et al. 2010). To make this terminology clearer, the causes and consequences should be separated from the definition—it may be called purging the definition.

While distinguishing causes and consequences from the definition of urban sprawl, some commentators describe urban sprawl—a remorseless phenomenon (Salingaros 2006)—as the extent of the area that is built up and its dispersion in the landscape. The degree of urban sprawl depends on the extent of built-up area and dispersed buildings: the more built over and the dispersed buildings means the higher degree of urban sprawl. In other words, urban sprawl is an unbound, unlimited, unorganized, haphazard, and poorly serviced development in the suburbs or peripheral regions of a city. It is a combination of multiple characteristics: a large scale scattered real estate development—homes, shops, recreations, and workplaces; large expanses of low-density or single-use developments; a large network of roads marked by huge blocks and poor access—generally automobile-dependent; a commercial strip development mainly alongside road networks; the consumption of sensitive green fields and agricultural land; and a lack of well-defined, thriving activity centers, such as downtowns (Bourne 2001; Burchell and Galley 2003; Club 1999; Danielson and Wolpert 1992; Ewing 1997; Hayden 2004; Jaeger, Bertiller, Schwick, Cavens, et al. 2010; Jaeger and Schwick 2014; Savitch et al. 1993; Zhang 2004). They count all land-uses i.e., commercial, business, and residential.

Unlike them, another bunch of academicians, while, discounting commercial land-use, suggests that this phenomenon has become a self-generating and self-fulfilling “machine”. Therefore, sprawl, often referred to as suburbanization, is a movement of residents outside big cities to the suburbs (to places with only residential land-use). They define urban sprawl by using two basic characteristics of the urban built-up areas: ‘configuration,’ which refers to the shape of the urban fabric; and ‘composition,’ which refers to the mixture of land uses within the built-up area. Built-up with areas a high percentage of residential land-use in an urban area means that it is homogenous and non-mixed, thus sprawling. Thus, urban sprawl is a ‘low levels of some combination’ of ‘density, continuity, concentration, clustering, centrality, nuclearity, mix-use, and proximity’. So, any land use pattern that has low values on one or more of eight distinct dimensions of land use patterns is sprawl (Bae and Richardson 2004; Banai and Wakolbinger 2011; Ewing, Pendall, and Chen 2002; Frenkel and Ashkenazi 2008; Fulton 1996; Galster et al. 2001; Salingaros 2006; Torrens and Alberti 2000; Wheeler 2000).

On the other hand, Salingaros holds that sprawl is neither a low-density city nor true country living; in pretending to be both, it accomplishes neither (Salingaros 2005a, 2005b, 2006). Though, he contends with sprawl as auto-dependent. He further adds that single-use zoning, where businesses are located away from residential areas, is one of the cardinal reasons for urban sprawl. This way, the drive-by customers are attracted by ample free parking. Therefore, we have the shopping mall surrounded by a vast parking lot; the office tower in the middle of farmland surrounded by its parking lot; the university campus in the middle of nowhere surrounded by its parking lots, and so on.

Unlike Salinger and others, Anthony Downs presents a very comprehensive definition of sprawl, suggesting that it is:

unlimited outward extension of development; low-density commercial and residential settlement; leap frog development; fragmentation of powers over land use among many localities; dominance of transportation by private automotive; lack of centralized planning and control; widespread strip commercial development; great fiscal disparities among localities; segregation of types of land use in different zones; and reliance on the trickle down or filtering process to provide housing to low-income households (Downs 1999).

Despite, this definition met with the criticism from every other circle of scholars of urban studies. Unlike Downs, Ewing's definition of urban sprawl is considered as the most common, the most general, and the most accepted. He states that it would be more appropriate to describe rather than define sprawl. Therefore, to him, urban sprawl is:

a scattered and discontinuous pattern of development, which leaves non-used spaces in the built-up area; development of residential areas with low densities, which creates extensive expansion of single dwelling units with their own private courts and causes an absence of public open space; commercial strip development alongside the main transportation axes; segregation of land uses, which separates residential areas from other urban land uses and removes urban functions from each other; and low accessibility and high dependency on private vehicles, mainly because of land-use segregation (Ewing 1997, 2008).

As is evidenced from the literature, urban sprawl is still a contesting and debatable phenomenon. There is no general agreement or acceptance on its definition. Varying professional and disciplinary orientations of the researchers and scholars can be a possible factor on the differences among them. Therefore, for this research project, we define the phenomenon of urban sprawl as:

an unbound and scattered pattern of development with non-used patches of land in the built-up area; conversion of large tracts of agricultural land to urban uses; single-use-zoning: separation of residential zones from other (commercial, business, and industrial) zones; development of residential areas with low densities; commercial strip development alongside the main transportation axes; and low accessibility and high dependency on automobiles.

3.2 Measures or Scales of Urban Sprawl

After defining urban sprawl in the first part of this section, we make an effort at answering the second part of the question i.e. 'how can we measure urban sprawl?'

Before exploring and analyzing the measures or dimensions or characteristics to quantify urban sprawl, we will describe three major forms or types of urban sprawl, which will help in determining the measures later on. There are three major forms of urban sprawl: low density continuous development, ribbon development, and leapfrog development. Low density sprawl is merely the gluttonous use of land in opposition to a value judgement about a higher density which would have been more appropriate. Ribbon development sprawl is composed of segments compact within themselves but which extend axially and leave the interstices undeveloped. Leapfrog development is the settlement of discontinuous, although possibly compact, patches of urban uses (Harvey and Clark 1965).

Just like its definition and description, the method and criterion for measuring and quantifying urban sprawl is equally a complex and contesting topic among scholars of urban studies (Anthony 2004; Frenkel and Ashkenazi 2008). As is described earlier, it is a multifaceted and multidimensional phenomenon that is difficult to quantify and measure accurately (Brunner and Kaminski 2016; Ewing, Pendall, and Chen 2002; Galster et al. 2001; Torrens and Alberti 2000). Therefore, this is best quantified by various measures—it requires a different set of measures for each dimension. In this backdrop, several scholars have suggested several varying, confusing, and sometimes contradictory measures to quantify it (Jaeger, Bertiller, Schwick, and Kienast 2010).

What makes this phenomenon more complex? When its causes and consequences are mixed up with its definition, as is mentioned earlier, and measures to quantify it. Therefore, we hypothesize that sprawl is not only a multifaceted and multidimensional but also a complex phenomenon that cannot be measured by only one or two measures, as is often done in many urban studies. In other words, we are not yet sure how to measure it.

Though several studies in recent years have attempted at dealing with this question (Galster et al. 2001; Malpezzi and Guo 2001; Torrens and Alberti 2000), yet there is disagreement among them. Almost every researcher proposes or suggests measures that differ from the others. For example, population density (Brunner and Kaminski 2016; Lopez and Hynes 2003), demographics (Bourne 2001), trip distances (Kenworthy and Laube 1996), land chances in the residential/urban areas only (Irwin and Bockstael 2004), built-up density in both urban and rural areas (Martinuzzi, Gould, and Gonz'alez 2007; Miller and Grebby 2014), a high rate of residential area among the land uses of the built-up area (Ewing, Pendall, and Chen 2002; Fulton 1996), temporal variations in the land across heterogeneous geographical areas (J. S. Wilson et al. 2003; Zeng, Sui, and Li 2005), and transforming the rural landscapes/peri-urban to urban forms (Anthony 2004; Shi et al. 2012) are the different methods or modes used to capture the various dimensions of sprawl. Some of the suggested measures have already been tested in empirical studies while many of them are still untested—remain theoretical till now.

Therefore, based on the analysis of an extant literature that has been reviewed so far, it can be suggested that density, spatial geometry, accessibility, growth rates, continuity, concentration, compactness, centrality, nuclearity, diversity, and aesthetic measures are the scales or measures to gauge or determine urban sprawl (Batty and Longley 1994; Benguigui 1995; Burton 2000; Ewing 1997; Ewing, Pendall, and Chen 2002; Frenkel 2004; Frenkel and Ashkenazi 2008; Galster et al. 2001; Jackson 1985; Jaeger, Bertiller, Schwick, and Kienast 2010; Razin and Rosentraub 2000; Torrens and Alberti 2000; Turner 1989).

Among them, density—the ratio between the amount of a certain urban activity (the amount of residential units and/or the number of residents) and the area within which it takes place—is the most popular sprawl measure (Burchell et al. 1998). A condition in which density is relatively low or decreases during a certain time period is called sprawl. After density, geometric or ecological measure is considered popular among the researchers of urban studies. It quantifies two main characteristics of the urban landscape: configuration refers to the geometry of the urban built-up area, and composition refers to its level of heterogeneity (Frenkel and Ashkenazi 2008). An urban area will be considered sprawling as long as its geometric configuration is irregular, scattered, and fragmented, and its land-use composition are more homogenous and segregated. Poor accessibility, followed by the massive use of private vehicles, makes the third most popular measure to quantify urban sprawl (Ewing 1997, 2008; Ewing, Pendall, and Chen 2002). It is beautifully described as “A gallon of gas can be used up just driving to get a gallon of milk” (Frenkel and Ashkenazi 2008). Accessibility can be quantified by measuring road lengths, road areas, transportation models (dominance of transportation by private automotive vehicles), and the traveling times of households (Downs 1999; Torrens and Alberti 2000).

The analysis of the extensive literature on urban studies suggests that there is a clear disagreement among the researchers on the dimensions, characteristics, or measures to quantify urban sprawl. Measures vary from discipline to discipline, researcher to researcher, and region

to region. Therefore, while keeping the temporal, spatial, thematic, and discipline limitations in mind, we propose our own set of measures to gauge urban sprawl: conversion of a large amount of agricultural land to urban development, density (both population and built-up), patterns of development, single-use zoning or segregation of land uses, and accessibility and modes of transportation (the auto-dependent landscape).

URBAN SPRAWL IN LAHORE

In the previous section, after an expansive review of the literature on the definition and measures or scales of urban sprawl, we proposed our own definition of this phenomenon and suggested our own set of measures or scales to gauge urban sprawl while keeping the temporal, spatial, thematic, and discipline limitations in mind. In the following passages we have applied them one by one on the urban growth in Lahore to measure whether the city is sprawling or compact.

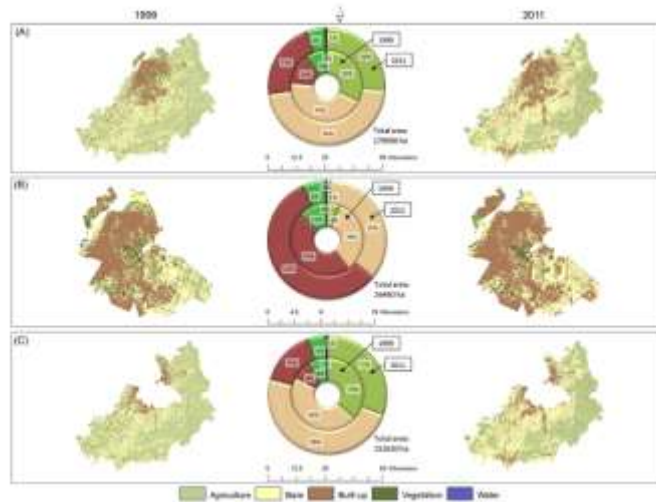
4.1 Conversion of a Large Amount of Agricultural Land to Urban Development

Beginning with, some of the commentators of the characteristics of urban sprawl have indicated that conversion of a large amount (in fact, large swathes) of agricultural land to urban development is one of the scales or measures to gauge urban sprawl.

In case of Lahore, a number of studies (Cermeño 2021; Gul et al. 2018; Javed and Riaz 2020; Nadeem et al. 2021; Zaman and Baloch 2011) suggest that the rapid conversion of large swathes of agricultural land to urban development is causing swift increase in the number of housing societies—many of which as gated communities—at the outskirts of Lahore. As a result, there is a massive expansion of real estate market in the city particularly since the 1990s. The whole process is resulting in extensions of the scattered housing societies on the one hand and vacant plots on the other.

In this backdrop, Bhatti and his colleagues (2015) have conducted a research on urbanization in a metropolitan region (Lahore) at three different scales or zones i.e. city district, urban, and peri-urban, between 1999 and 2011. Their results, at city district level, indicate that the city started expanding towards south by 2011, earlier the majority of built-up area existed towards the north and northwestern parts (for details see Fig. 1A). Whereas the built-up area, both in urban and peri-urban zones, expanded towards the north-western and eastern parts, and the northern and southern parts, respectively (for details see Fig. 1B and 1C). The major contributors to the built-up area at all these scales were bare, vegetation, and agriculture. The built-up area increased from 47 per cent to 57 per cent in urban zone while it rose to around 84 per cent in peri-urban between 1999 and 2011. Therefore, vegetation and agricultural area reduced by around 39 per cent and 17 per cent, respectively, in the peri-urban zone.

Figure 1: The Land Use/Land Cover (LULC) Maps and Area Graphs of 1999 and 2011 at the (A) City District, (B) Urban and (C) Peri-urban Scales

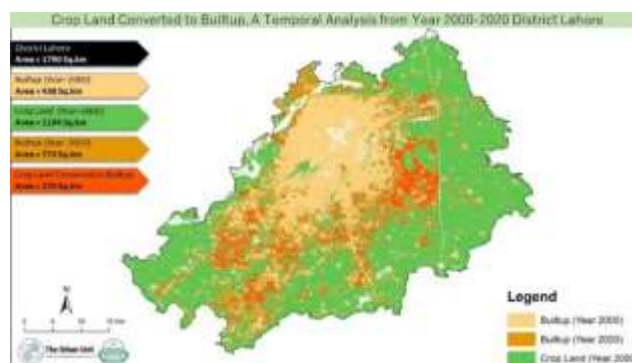


(Source: Bhatti et al. 2015)

Overall, the southern fringe of Lahore has been swiftly urbanizing over the last few decades (Cermeño 2021; Javed and Riaz 2020). This is evident from the fact that, during the past four decades, 114,630 hectares of arable land has been converted for urban use, and 18 per cent of this converted land fell to 252 sprawling housing schemes, mainly due to the lack of proper regulations and institutional framework (Zaman and Baloch 2011; Rana and Bhatti 2018).¹⁰

To substantiate this argument of rapid urban growth at the cost of conversion of large tracts of agricultural land to urban development, Figure 2 is presented here. According to this figure, the built-up of the district Lahore increased from 438 square kilometer in 2000 to 773 square kilometer in 2020; where the cropland area decreased from 1194 square kilometer in 2000 to 924 square kilometer in 2020. This suggests that 270 square kilometer of the cropland area was converted to urban area in the short span of twenty years only.

Figure 2: Cropland Area Converted to Built-up Area from Year 2000-2020



(Source: The Urban Unit)

This argument is further corroborated by the data presented in Table 1. It illustrates, in the past four decades, about 19 per cent of the agricultural land converted for urban uses was acquired for housing schemes by private and cooperative housing societies. The remaining 81 per cent was acquired for industrial and government mega projects and for informal settlements. As a result of this conversion of land, total cultivated area has decreased from 166,862 hectares in 1972 to

¹⁰ The total number of housing schemes registered with LDA has reached 372 (for details see https://lda.gov.pk/private_schemes/); whereas LDA has declared 109 housing schemes illegal (for details see <https://lda.gov.pk/website/page.php?p=TVRnMU5RPT0=>), therefore, they have not been registered with LDA yet. Apart from this, 104 housing schemes are registered with Cooperative Housing Societies Department. In addition to the societies registered with LDA and CHS, DHA has already developed nine phases and is acquiring land for developing other four phases.

52232 hectares in 2010. It means that about 3,016 hectares of agricultural land on the fringes of the city has been converted to urban use annually (Zaman and Baloch 2011).

Table 1: Agricultural Land Conversion in Lahore Metropolitan District of Pakistan

Period	Total Area	Cultivated Area	Overtime(%) Change	Use of converted Cultivated Areas (Hectares)					
				PCH*	LDA	DHA	Others	Total	UL**
000–1972	177204	166862	94.2						10342
1972–1980	177204	163413	92.2	182.6 (5)	2794. 4 (81)	229.5 (7)	242.8 (7)	3449 (100)	13791
1980–1990	177204	114298	64.5	1680. 2 (3)	2753. 3 (5)	708.2 (1)	44472 .6 (91)	49114. 3 (100)	62906
1990–2000	177204	81040	45.7	2930. 4 (9)	271.5 (1)	819.9 (2)	29236 .4 (88)	33258. 2 (100)	96164
2000–2010	177204	52232	29.5	4494. 5 (16)	804.1 (3)	5350. 9 (19)	18159 .0 (62)	28808. 5 (100)	12497 2
Overall	–	–	–	9287. 7 (8)	6123. 3 (5)	7108. 5 (6)	92110 .8 (81)	114630 .3 100	–

*Note: Figures in parenthesis indicates percentages; * private and cooperative housing societies; and ** urbanized land and uncultivated area (Source: Zaman and Baloch 2011).*

4.2 Density (Both Population and Built-up)

Density (of both population and built-up) mainly in the peripheral region of the city is another indicator to measure urban sprawl. In the early years of expansion of cities' fringes, low density of population while high density of built-up indicate urban sprawl. However, in the latter years of urban development in these areas, the population density may increase and these areas may become a part of main city or compact city.

Lahore city's population increased from around 1.12 million in 1951 to 11 million in 2017 (Punjab Bureau of Statistics 1998, 2017), and to 14 million in 2023. Till 2016, around 80 per cent of Lahore's population was urbanized (Punjab Bureau of Statistics 2016), however, it was upped to 100 per cent in 2017 because the whole district was declared as an urbanized area (Pakistan Bureau of Statistics 2017). Overall, the population density of Lahore city increased from 4883 persons per square kilometer in 2010 to 6279 persons per square kilometers in 2017 (Nadeem et al. 2021; Pakistan Bureau of Statistics 2017; Rana and Bhatti 2018). This, overall, population increase and density count do not help us in quantifying urban sprawl. Therefore, we will try to explore and analyse population and built-up density in the outskirts of the city to present a clearer and better picture that may help us in computing urban sprawl in Lahore.

In this context, Nadeem and his colleagues (Nadeem et al. 2021) have made a valuable attempt at calculating the population density of Lahore city at the union council level (sub-zones) by taking Gulberg as the Central Business District (CBD)—the city center.¹¹ The reason for choosing the Gulberg zone as the CBD was that it comprises commercial centers, business centers, shopping markets, offices, banks, education and health facilities, etc. The figures (Figure 3 and Figure 4), which are taken from their study, present a very clear picture of population density in the city of Lahore. Figure 3 illustrates that the density is high at the center and it starts decreasing with the

¹¹ Lahore is divided in five sub-districts (Lahore City, Model Town, Raiwind, Shalamar, and Lahore Cantonment), nine zones (Aziz Bhatti, Cantonment, Data Gunj Bakhsh, Gulberg, Iqbal, Nishter, Ravi, Samanabad, Shalamar, and Wagha— and Cantonment), and 274 union councils.

increase in distance from the CBD. The density within the radius of 14 kilometer of the CBD is more than 150 persons per hectare while it is less than 150 persons per hectare beyond 14 kilometers. Figure 4 indicates that 24.38 per cent, 59.13 per cent, and 16.49 per cent of the total population is residing within the radius of 0–5 kilometers, 5–14 kilometer, and 14–38 kilometer from the CBD, respectively (Nadeem et al. 2021).¹² High density (dense population) in the center and low-density at the peripheral areas means that the city is sprawling on its fringes.

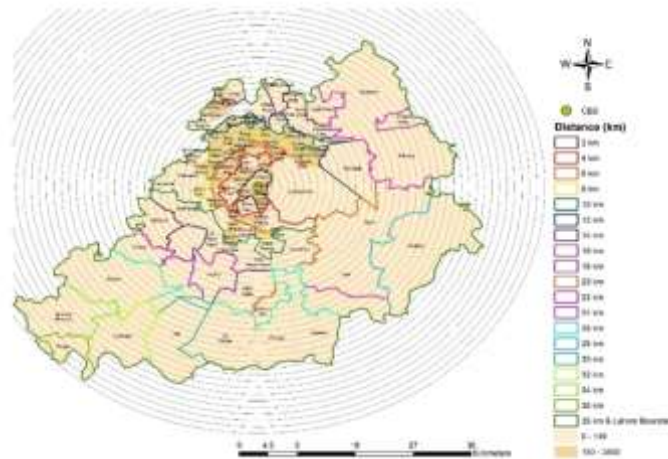


Figure 3: Density Profile and Population Density (Persons per Hectare) for Lahore (Source: Nadeem et al. 2021)

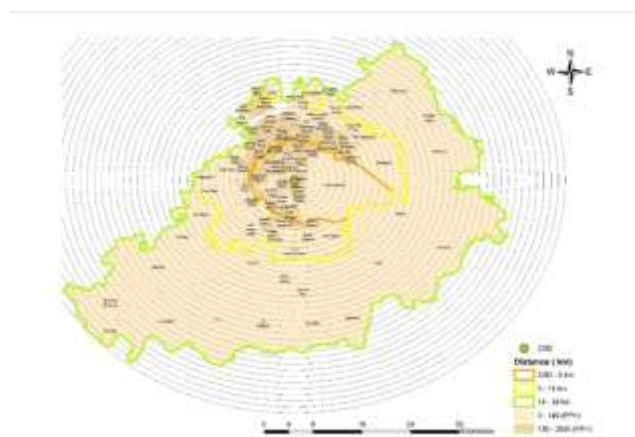


Figure 4: Population through Distance to CBD and Population Density (Persons per Hectare) for Lahore (Source: Nadeem et al. 2021)

For another look at Lahore’s population density in the Municipal areas—the densest portions of the city, see Figure 5. The figure clearly shows low population density on the suburbs while high population density in the central part of the city.

¹² In urban areas, five kilometer is considered a short distance and can be traveled by using a bicycle, motorcycle, and public transport (for details see Kotharkar, Bahadure, and Sarda 2014).

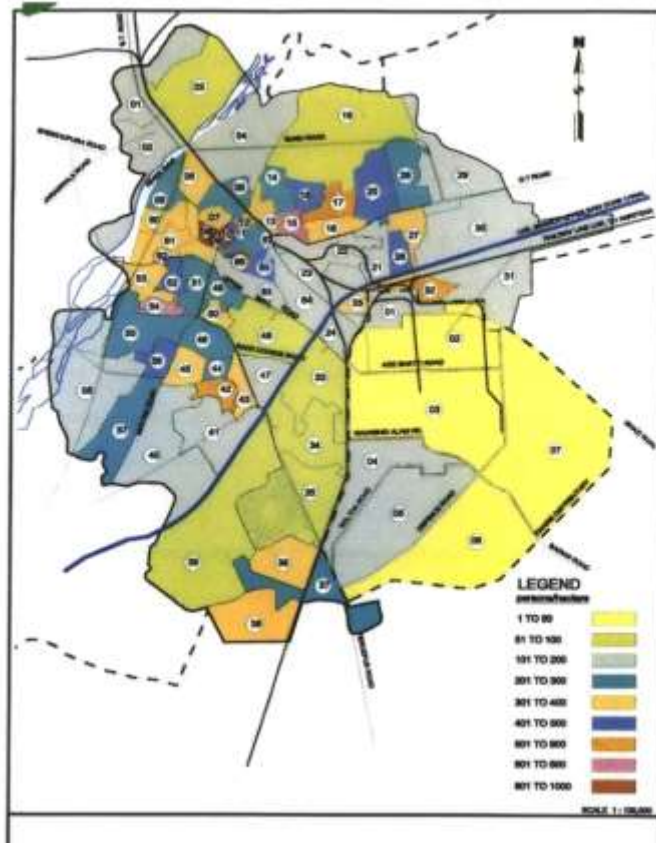


Figure 5: Existing Densities in Lahore’s Municipal Area (Source: Malik 2014)

Now turning towards the built-up area, we have found evidences that the city expanded towards south and east mainly due to rise in population and increasing demand for housing between 1999 and 2011. During this period, the built-up area—largely at the cost of agricultural, vegetation, and bare areas—almost doubled. Interestingly, the increase in built-up area during 1999 and 2011 in the outskirts of the city was significantly higher than that in the central urban areas. Around 84 per cent increase in the built-up area in the outer region as opposed to around 22 per cent in the central urban region implies rapid urbanization – urban sprawl – in the outskirts of the city (Bhatti et al. 2015; Nadeem et al. 2021).

Extending it further, Table 2 illustrates that the built-up area of Lahore increased from 64.43 square kilometer in 1966 to 84.54 square kilometer in 1988; and from 179.77 square kilometer in 2000 to 598.30 square kilometer in 2017. The spatial growth was 31.21 per cent, 112.64 per cent, and 232.81 per cent between 1966–1988, 1988–2000, and 2000–2017, respectively. Contrary, the population growth was 126.36 per cent, 49.65 per cent, and 101.99 per cent between 1966–1988, 1988–2000, and 2000–2017, respectively (Hussain and Nadeem 2021). Overall, the population increase from 1966 to 2017 was 584.20 per cent whereas the built-up area increase in the same period was 828.60 per cent. This is the clear indication of urban sprawl from 1966 to 2017 because the percentage of built-up area growth was more than percentage of population growth.

Table 2: Built-up Area in Lahore in 1966, 1988, 2000, and 2017

Sr. No.	Year	Built-up Area (Sq. Km.)	Increase d Built-up Area (Sq. Km.)	Increase in Built-up Area (Percentage)	Population	Increased Populatio n	Increase in Population (Percentage)
1.	1966	64.43	-	-	1,646,000	-	-
2.	1988	84.54	20.11	31.21	3,726,000	2,080,000	126.36
3.	2000	179.77	95.23	112.64	5,576,000	1,850,000	49.65
4.	2017	598.3	418.53	232.81	11,263,000	5,687,000	101.99

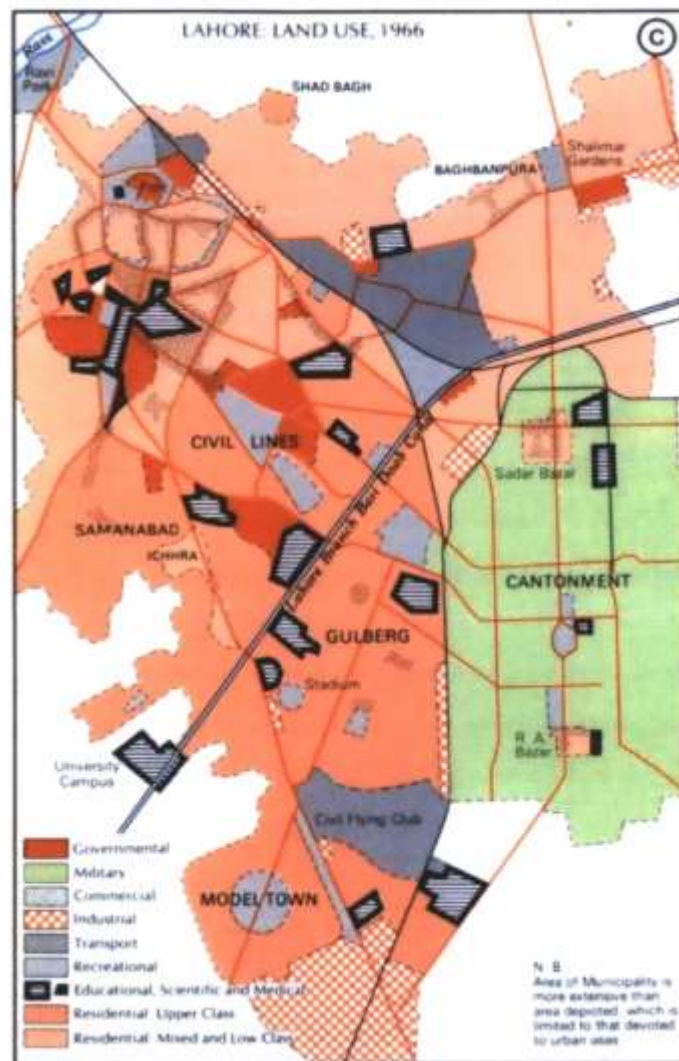
(Source: Hussain and Nadeem 2021)

4.3 Patterns of Development

Before exploring and analyzing the patterns of development (i.e. low density continuous development, ribbon development, and leapfrog development) in Lahore, it is imperative to present the urban development in Lahore in the mid-1960s (for details, see Figure 6, which notes the pushing of residential settlements for low-income people to the northern edges of the city that is a former floodplain that has been partially protected by an embankment and most recently, by the Ring Road) when the “Garden City” approach was adopted.¹³ Before adopting “Garden City” approach, Pakistani cities were demonstrating progress toward downtown development. The focus on low-rise garden cities and suburban development, subsequently, neglected downtown development and incentivized sprawl (Cermeño 2021; Groote et al. 1989; Haque 2020; Malik 2014). This is evidenced from development along main roads in Pakistani cities where one can see houses, workshops, shops, mosques, schools, and that ubiquitous sign of habitation: a pool of sewage. These shoots of human habitat sprout all across the landscape amid fields and farms. These are the precursors of urban sprawl, spreading into the countryside. Pakistan’s cities are spilling out into the surrounding countryside—high-density urban cores surrounded by bands of relatively low-density (Mohammad A. Qadeer 2014).

Figure 6: Lahore’s Land Use in 1966

¹³ The idea of “Garden City” was posited by Ebenezer Howard to avoid huge metropolitan development (Howard 1898, 1902). This concept of city development soon turned into a movement. Therefore, Pakistan was not the only country which adopted this approach, but many other countries including India, South Africa, and the United States also turned towards this urban development approach—e.g., Bangalore, Pinelands, and Kansas were prime examples of “Garden Cities”. To sum up, it can be argued that the colonial hangover affected city plans in many parts of the world.

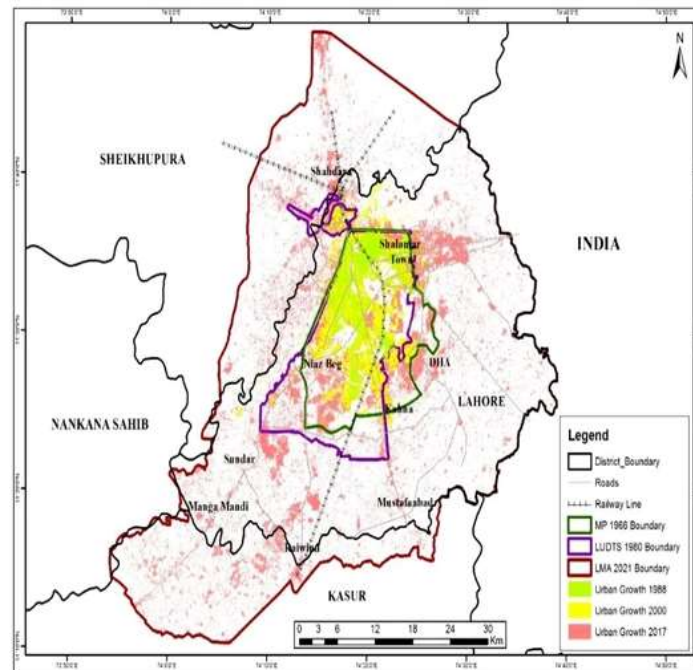


(Source: Malik 2014)

Lahore is no exception to it—like other cities, it has also fallen a victim to this spill out along its main arteries or roads connecting with other major cities. The initial growth of the city was circular within a radius of 0–5 kilometer. From 1980 to 2000 the pattern of urban growth was contiguous within the radius of 15–20 kilometer, whereas during the last couple of decades, the growth pattern has turned into radial cum linear that is scattered at periphery attaining the form of multi-nuclei city. In other words, rapid but scattered growth has occurred along its major arteries i.e. Raiwind Road, Ferozpur Road, Grand Trunk Road, and Multan Road/Canal Road up to the radius of 20–35 kilometer. A thorough analysis of the implementation of master plans in Lahore suggests that only 57 per cent, 53 per cent, and 80 per cent growth of Lahore occurred in conformance with the land use proposals of Master Plan for Greater Lahore (MPGL) 1966, Lahore Urban Development and Traffic Study (LUDTS) 1980, and Integrated Master Plan for Lahore (IMPL) 2004, respectively. This means that 43 per cent, 47 percent, and 20 per cent urban development occurred in deviation from these plans i.e., MPGL 1966, LUDTS 1980, and IMPL 2004 (for details, see Figure 7). This is evident from the fact that 486 housing schemes (372 registered with LDA and 104 registered with CHS) have been developed as a result of traditional land use planning in Lahore. Out of which, several housing societies have emerged in the south-

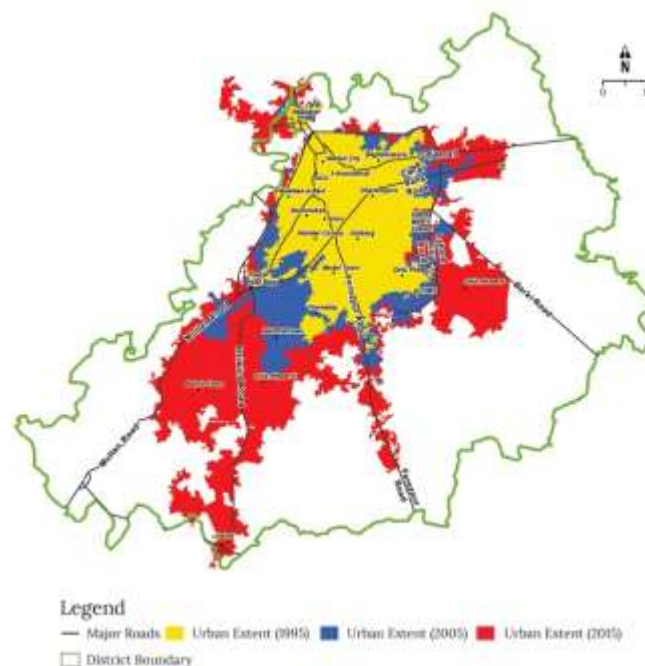
west direction of the city causing loss of agricultural land. Additionally, nine phases of DHA¹⁴ have been developed along eastern side of Lahore but main focus of growth remained in the southern part of the city due to its efficient linkages with Motorway and Multan Road connecting it with the rest of the country (Hussain and Nadeem 2021; Shirazi and Kazmi 2014). This signals/indicates ribbon sprawl, as is clear from Figure 8.

Figure 7: Overall Spatio-temporal Growth of Lahore from 1966 to 2017



(Source: Hussain and Nadeem 2021)

Figure 8: Urban Extents of Lahore in 1995, 2005, and 2015

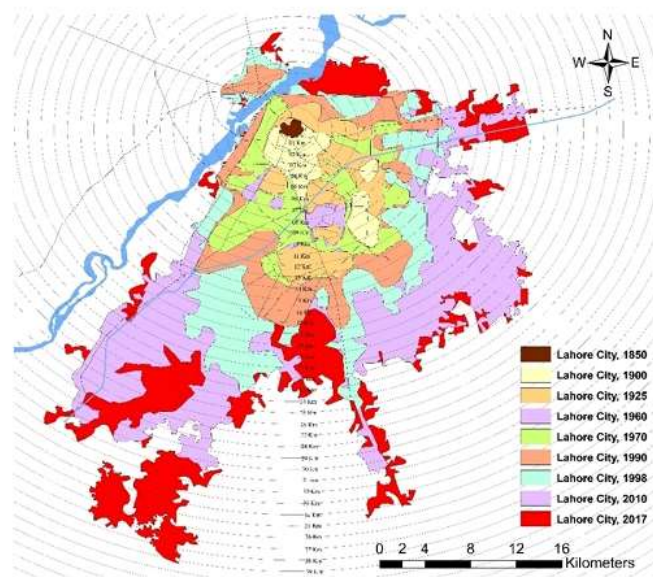


(Source: The Urban Unit)

¹⁴ The Defense Housing Authority (DHA) is one of the largest land development agencies in Pakistan. It has been developing Lahore city in its suburbs, mainly in South and East. Despite controlling almost a third of the area of metropolitan Lahore, its low-slung suburban model houses only about 150,000 people (for details see, Cermeño 2021; Haque 2020). However, the latest available number count is 378,000 (Qureshi and Li 2023).

The circular development in Lahore in the early decades whereas low-density, ribbon, and leapfrog growth in the recent decades is also evidenced from the Figure 9. The radius of the city has risen from one kilometer in 1850 to 38 kilometer in 2017, with transformation from the circular urban growth in 1850 to low density, ribbon, and leapfrog in 2017. The population growth was extremely high in the 1960s. As a result of this high population growth, the city started expanding towards the south and the southeast in an unplanned manner. This happened mainly due to the restriction on the eastern side by the Indian border and on the western side by the River Ravi. The city, again, experienced massive growth in 1970s and 1990s (Nadeem et al. 2021). This resulted in leapfrog on the outskirts of the city and ribbon development along main roads mainly Raiwind Road, Ferozpur Road, Grand Trunk Road, Multan Road/Canal Road, and the Motorway.

Figure 8: The Historical Growth Pattern of Lahore City from 1850 to 2017



(Source: Nadeem et al. 2021)

As is mentioned above, there is a boom of housing societies in Lahore. These housing schemes mark the periphery of the city on the one hand while push the city's boundary on the other. Though in 2017 Lahore district has been classified as completely urban, however, there still remain urban villages that are underdeveloped islands in a sea of pristine gated housing societies including that of the DHA (Cermeño 2021; Shoaib 2019).¹⁵ The land for these housing schemes was not acquired from the state or government but private landowners because the state owned land run into delays as the bureaucracy either unintentionally or deliberately do not submit the required documents to the Board of Revenue (Lahore Development Authority 1991). This, certainly, is the result of the institutional structure of urban governance in Lahore. The three important institutional structures in the urban development landscape in Lahore is LDA, MCL, and LCB and DHA. Other institutions that are involved in housing development specifically are CHS and the private sector. Similarly, land use master plans have not curtailed growth of housing societies on the periphery of Lahore that are subsuming agricultural land with now little green area left (Shoaib 2019). What LDA is really doing is giving these settlements approval by ease of land use conversion, rather than adopting a punitive approach. By tweaking its standards and regulations, LDA is legalizing what otherwise would have been illegal. According to LDA, 254

¹⁵ For example, nearly four decades ago, a conflict took place between the DHA and the residents of Charrar Pind—a formerly rural settlement now well within the urban sprawl. The agricultural lands surrounding the village were progressively sold and transformed as housing projects. Today, the village stands within the DHA that serves as modern housing for the affluent classes. Well beyond Charrar Pind, in the southern margins of the city, newly planned housing schemes continue to spring up across what was previously rural hinterland, replacing pre-existing villages.

schemes have been approved in urban area of Lahore since 1970—the number of current registered societies is 372 (Zaman and Baloch 2011).

These housing societies have been eating up large tracts of agricultural land. This is evident from the fact that between 1970 and 2010, 231 housing schemes were developed by private developers and cooperative societies (11, 90, 55, and 75 private housing schemes were developed during 1970-1980, 1980-1990, 1990-2000, and 2000-2010, respectively). The DHA Lahore, since 1973, has developed 158,709 hectares of land in 9 phases, whereas, 372 societies registered with LDA cover 265,651 hectares of land. The housing schemes mostly expanded along north and south areas while the DHA developed large tracts of land located in the south-eastern part of Lahore. Till 2007, house construction activities were almost completed on the schemes established during the 1970s. Whereas the schemes established during the 1980s, 1990s, 2000s, and 2010s had around 22, 66, 62, and 73 per cent vacant area till 2007 (Anjum and Hameed 2007). This indicates low-density sprawl, which is evident from Table 3—that shows that many plots, mainly due to land speculation, were lying vacant in the housing schemes that were developed on the fringes of the city. Overall, 40186 plots were developed; 20069 plots were constructed; and 20117 plots were vacant. Thus, around 50 per cent of the total plots were lying vacant mainly due to speculation (Nadeem et al. 2021). For updated data on total urban area, total plots, and constructed and vacant plots in Lahore, see Table 4. Thus, we can say that Lahore city has all the characteristics of urban sprawl i.e. low-density continuous development, ribbon development, and leapfrog development.

Table 3: Colonization of Housing Schemes in Lahore between 1981 and 2017

	Total Plots (Percentage)	Constructed Plots (Percentage)	Vacant Plots (Percentage)
1981-1990	100	78	22
1991-2000	100	34	66
2001-2010	100	38	62
2011-2017	100	27	73

(Source: Nadeem et al. 2021)

Table 4: Details of Urban Area, Total Plots, and Constructed and Vacant Plots

Developing or Governing Authority or Agency	Total Societies or Phases	Total Area (Kanal)	Total Area (Hectares)	Total Plots	Constructed Plots (Percentage)	Vacant Plots (Percentage)
Lahore Developmen t Authority	372	265,651	13,438.14	209,51 9	62	38
Defence Housing Authority	9	158,709 *	8028.40	21,219	68.1	31.9
Cooperative Societies Department	104	162,817	8236.21	129,33 2	61	39
Grand Total	485	587,177	29702.76	360,07 0		

*Source: Documents, Officials, and Real Estate Developers. * The area of DHA Lahore is expected to be increased to 312,000 Kanal after the completion of Phase-X, Phase-XI, Phase-II, and Phase-XIII.*

4.4 Single-use Zoning or Segregation of Land Uses

In Lahore, the traditional development pattern encourages high-density living and mixed land uses but could not be followed due to the dissuasion of existing building bye-laws, and the absence of mixed-land use zones in the Master Plans of the city (Nadeem et al. 2021). Therefore, Lahore, like other cities in Pakistan, does not have a downtown or city center—the dense areas with mixed-use buildings (residential, office, commercial, and entertainment) within an almost walkable reach (Haque 2020). Subsequently, it is falling victim to urban sprawl, at the expense of valuable agricultural land, where housing societies with single-family homes and large networks of roads are being preferred over other activities and services such as education, entertainment, offices, retail, and warehousing. This is the result of largely single-use zoning and ban on high rise buildings for commercial purposes let alone the residential. High rise and multi-use zoning are not only discouraged but also penalized, most often. In addition, land use laws, building regulations, and zoning codes are unfriendly to commercial construction, public spaces, and commercial and community activities (Haque 2020).

According to the land development guidelines in Table 5, until 2010, only two per cent of land allocated for new housing in Lahore was allowed to be used for shopping, entertainment, offices, flats, and hotels. Now we have a slight improvement, with five per cent of land allowed to be developed for these purposes.¹⁶ Whereas the land used for single-family dwelling units has slightly been reduced from 60 per cent to 54 per cent while the per cent of land used for roads remains the same i.e. 25 per cent. Moreover, it indicates that single-use zoning over mixed-use zoning is preferred (for details, see Table 6). Furthermore, commercial use of land is often restricted along main roads and these (commercial) properties are heavily taxed (Hameed and Nadeem 2008; Haque 2014a). According to an estimate, in 2015, around 3.09 billion PKR were collected on account of commercial fee—2.80 billion PKR as permanent commercialization fee and 285 million PKR against annual/temporary commercialization fee (Bhatti et al. 2015). Contrary to this, tax is not imposed on the vacant housing plots. Therefore, plenty of plots are lying vacant in several societies (for details on vacant and constructed plots, see Table 4). Subsequently, the city is sprawling on the outskirts.

Table 5: Rules for Development of New Housing Colonies in Lahore

Per cent of Land For	Until 2010	After 2010
Housing with single-family dwelling units	60	54
Parks	7	7
Commercial (including shopping, entertainment, hotels) offices, leisure,	2	5
Public schools, public buildings (e.g., libraries)	2	5-10
Graveyards	2	2
Roads	25	25
Miscellaneous	2	2
Other guidelines		<ul style="list-style-type: none"> • Maximum plot size should be 1,000 yards. • Approach roads should be 60 feet and internal roads 40 feet.

¹⁶ Contrary, total commercial area in nine developed phases of DHA is around 23.07 percent (Phase I: 5%; Phase II: 5%; Phase III: 25%; Phase IV: 15%; Phase V: 10%; Phase VI: 30%; Phase VII: 15%; Phase VIII: 35%; and Phase IX: 30). There are no hard and fast rules for allocation of commercial area in DHA.

		<ul style="list-style-type: none"> • One 10-marla plot for solid waste management for every 1,000 plots. • Grid station for WAPDA (if WAPDA requires). • 20 percent of plots up to five marlas (for the low-income). • Location of tubewell (if WASA requires).
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Source: Public infrastructure tables from Pakistan's Annual Plans

Table 6: Percentage of Residential and Commercial Plots in Societies Registered with LDA

Total Societies/Phases	Total Area (Hectares)	Total Plots	Residential Plots	Commercial Plots
372	13,435.94	209,519 (100%)	191,692 (91.50%)	17,827 (8.50%)

Source: Documents, Officials, and Real Estate Developers

4.5 Accessibility and Modes of Transportation (The Auto-Dependent Landscape)

Poor accessibility, the automobile-dependent landscape, and a large network of roads also indicate that the city is sprawling on its outskirts. Pakistan's existing public transport system in general and Lahore's in particular is insufficient to meet the travel demand of the peripheral residents. Consequently, the demand for personal cars and private vehicles (mainly two-wheelers) despite price hikes, supply chain hiccups, economic recessions, and other issues, has been surging (Nadeem et al. 2021). The rise has been exponential, especially in the previous few years. According to Pakistan Economic Survey (PES), approximately 1,977,704 cars got registered between 2012 and 2021; out of which, 812,204 were registered in Lahore only. Whereas, during the same period, 4.2 million vehicles (cars, two wheelers, and three wheelers) were registered in Lahore, according to the Motor Registration Authority of the Punjab Excise and Taxation Department. Earlier, the total number of registered vehicles in the city was 0.5 million in 1998 and 1.2 million in 2005. For further details on registered vehicles in Lahore from 1990 to 2023, see Table 7). For a comparison of Lahore, Dhaka, and Delhi on population and registered motor vehicles in 2020, see Table 8—which clearly indicates that Lahore has less population and more vehicles as compared to both Dhaka and Delhi.

Table 7: Registered Vehicles in Lahore (1990 – 2023)

Year	Ambulance	Bus	Delivery Van	Double Cabin	Earth Machinery	Motor Car	Motor Cycle	Rickshaw	Taxi Cab	Tractor	Truck	Grand Total
1990	6	1,168	1,648	9		13,852	21,233	419	643	257	281	39,516
1991	3	1,106	2,449	90	1	12,909	20,952	436	589	170	341	39,046
1992	9	1,291	1,981	206	2	9,964	18,185	432	2,817	229	911	36,027
1993	9	3,559	2,246	246	9	8,756	16,353	626	5,664	415	1,201	39,084
1994	7	290	786	109		8,758	12,389	1,154	509	215	263	24,480
1995	11	182	816	155	1	8,611	12,786	886	419	336	154	24,357
1996	4	195	801	70	2	11,635	20,459	1,802	289	255	129	35,641

19 97	17	227	862	59	1	11,28 5	18,57 3	2,278	342	230	154	34,02 8
19 98	7	609	928	49	3	12,85 9	17,00 2	2,879	375	242	228	35,18 1
19 99	4	703	995	14	1	11,73 9	19,74 6	3,884	235	1,77 9	400	39,50 0
20 00	12	1,21 1	1,18 2	46	2	13,38 3	25,50 9	2,666	119	499	313	44,94 2
20 01	21	320	985	10	1	14,69 5	25,07 7	3,928	96	498	226	45,85 7
20 02	19	809	1,60 8	25	2	17,28 3	36,49 3	3,340	125	516	649	60,86 9
20 03	10	1,28 9	2,36 2	61	3	28,54 4	58,72 2	7,741	158	802	973	100,6 65
20 04	30	1,37 6	3,16 0	76	15	44,32 9	91,03 9	10,87 4	133	1,22 5	866	153,1 23
20 05	37	2,77 9	4,77 8	320	24	50,96 9	99,08 8	5,174	95	1,82 5	1,1 75	166,2 64
20 06	104	6,07 7	6,05 8	327	89	75,08 2	117,4 59	774	107	1,84 0	1,8 48	209,7 65
20 07	38	3,16 6	5,70 7	363	102	77,63 4	139,4 05	4,308	81	1,96 9	2,5 15	235,2 88
20 08	84	1,21 0	4,75 4	176	95	56,71 2	140,8 07	6,308	50	1,98 5	1,4 57	213,6 38
20 09	54	970	2,70 0	37	74	39,72 8	147,9 05	10,37 3	20	2,96 0	1,7 95	206,6 16
20 10	192	903	2,76 8	43	91	46,93 0	196,2 92	13,95 4	32	2,90 7	1,7 05	265,8 17
20 11	235	1,49 1	2,81 4	272	99	51,84 6	212,9 05	12,50 6	363	2,42 6	1,8 23	286,7 80
20 12	77	1,50 7	3,20 0	389	79	61,22 9	237,0 81	9,706	3,0 25	2,54 3	1,9 13	320,7 49
20 13	188	1,77 4	3,23 9	354	301	65,83 4	294,4 31	11,06 5	37	2,52 5	1,8 85	381,6 33
20 14	80	2,80 8	3,20 8	343	192	65,61 7	286,4 05	15,31 0	25	2,62 7	1,5 01	378,1 16
20 15	86	1,87 8	8,89 7	498	205	83,48 6	303,2 66	15,81 6	6,2 69	2,32 5	592	423,3 18
20 16	209	1,86 0	4,83 7	448	297	96,44 7	324,8 28	16,08 9	1,5 28	2,08 6	1,1 14	449,7 43
20 17	433	1,86 1	11,8 26	502	425	109,5 05	356,5 10	14,89 5	41	2,64 6	1,4 57	500,1 01
20 18	158	1,50 9	4,74 0	471	339	116,6 76	388,7 07	10,52 2	98	3,03 9	928	527,1 87
20 19	165	1,13 8	4,83 6	342	261	90,76 0	303,0 69	9,474	33	1,94 2	474	412,4 94
20 20	94	551	1,76 9	267	166	47,32 2	193,9 72	3,138	33	903	352	248,5 67
20 21	117	936	3,92 4	635	287	75,32 8	301,7 20	5,858	87	2,52 0	397	391,8 09
20 22	105	880	3,38 3	725	196	74,56 6	243,2 75	1,454	151	2,80 6	608	328,1 49

2023	76	419	1,088	425	61	24,996	97,043	2,295	22	1,429	299	128,153
Grand Total	2701	48,052	107,335	8,162	3,426	1,539,269	4,798,686	212,364	24,610	50,971	30,927	6,826,503

Source: Excise and Taxation Department, Lahore, Punjab

Table 8: A Comparison of Lahore, Dhaka, and Delhi for Population and Registered Motor Vehicles in 2020

City	Year	Population (Millions)	Year	Motor Vehicles (Millions)
Lahore	2020	12.642	2023	5.98
Dhaka	2020	21.00	2021	1.63
Delhi	2020	30.30	2020	11.89

The city has a large network of roads i.e. 14124 kilometer (The Urban Unit 2020) where 6.8 million vehicles (four million in 2015) and 4.8 million motorcycles are currently present, according to the official website of the Capital City Traffic Police Lahore—private vehicles (cars, two-wheelers, and three-wheelers) make for around 95 per cent of total vehicles in Lahore (Capital City Police Lahore 2023).¹⁷ The percentage of private vehicles (cars, two-wheelers, and three-wheelers) registered in the year 2012 was 92.94 per cent of total vehicles in Lahore. The percentage of the aforementioned vehicle types in Lahore was recorded 93.37 per cent in 2013, 93.98 per cent in 2014, 94.31 per cent in 2015, and 94.89 per cent in 2016 (Punjab Bureau of Statistics 2017).

In 2008, as Japan International Cooperation Agency (JICA) reports, 1.9 million motorized vehicles were registered in Lahore district. The number of registered vehicles sharply increased by 294 per cent between 2001 and 2008,¹⁸ higher than the provincial motorization trend, i.e., 212 per cent during the same period. Among vehicle types, Lahore citizens nowadays show a strong preference for motorcycles, which increased at much faster rate, by 483 per cent during the same period (Japan International Cooperation Agency 2012). According to the Motor Registration Authority of the Punjab Excise and Taxation Department, 3.2 million motor cycles have been registered in Lahore during 2011 and 2021.

There are three important reason behind demand for urban travel via private automobile and swift increase in registered vehicles. First, over the past decade or so there has been a rapid increase in the incomes of urban households—meaning that more people can afford to buy cars. Second, over the same period commercial banks have entered the vehicle leasing market and injected significant capital into the auto-leasing business—thereby resulting in a significant increase in automobile sales. Third, most new urban developments for high-income households are located far from urban cores, in areas with little or no public transit availability. Thus, the development of affluent neighborhoods in suburbs has generated additional demand for travel by private automobile (Haider 2014).

¹⁷ The total number of vehicles in the entire province of Punjab are 19.6 million. This shows that Lahore has around 32 per cent of the total vehicles in Punjab.

¹⁸ The registered vehicles including motorcycles increased by 36.7 per cent per annum during the same period.

CONCEPT, DEFINITION, AND HIERARCHY (LEVELS/CADRES/SERVICES) OF BUREAUCRACY

5.1 Concept and Definition of Bureaucracy

In the previous two units, we have defined the phenomenon of urban sprawl and determined its scales to measure urban sprawl and applied those indicators on Lahore to gauge whether the city is sprawling or compact. Whereas in this section, we make an effort to define bureaucracy on the one hand and determine its hierarchy (and/or levels/cadres/services) that governs urban development.

The French word 'bureau' referring to 'desk or office' and the Greek word 'kratos' meaning 'rule or political power' complement each other to form the word 'bureaucrat' (Alesina and Tabellini 2007). This means a bureaucrat is a paid official responsible for performing the core tasks or duties of a public administration. The term 'bureaucrat' employs to the paid officials of both the public (government) as well as quasi-public (semi-government) organization (Alesina and Tabellini 2007; Weber 1968). Interestingly, some academicians hold that the term bureaucracy can also be applied outside of the public and quasi-public sector. To them, those who discharge administrative duties or functions in the private sector (or organization) are also called bureaucrats (Albrow 1970; Besley et al. 2021). They reason that, despite huge differences in pay and conditions of the employees, there is often an overlap in the tasks performed across private and public and quasi-public sector. They, referring to Max Weber (1947, 1968), include the administrative staff of both the public and private organizations in bureaucracy citing both have similar features.

Weber brings together analysis of the social basis of bureaucracy (e.g., development of the rule of law), the functioning of bureaucratic organizations (e.g., its legitimation as well as potential dysfunctions associated with tenure in office), and the position and work of bureaucrats or administrators in them (Bendix 1978; Monteiro and Adler 2022). In short, modern bureaucracy of large-sized organizations possess following features i.e. division of labor and specialization, rules and regulations, hierarchy of authority, impersonality in interpersonal relations (separation of administration from ownership), career orientation, and formal selection process (M. M. Khan 1977; Lunenburg 2017; Monteiro and Adler 2022; Weber 1947, 1968).

Majority of the researchers/academicians have followed Weberian course and studied bureaucracy from organizational dimension. For example, both Henry Mintzberg and Francois Dupuy, while studying bureaucracy from an organizational dimension, define it as "a collective order, a legitimate state of domination based upon a set of rules and procedures, and a professional and process based organization" (Mintzberg 1979) and "an organization which translates its technical constraints (the task), its human constraints (personnel), or both, spontaneously and systematically into its mode of functioning (that is to say, without wondering whether there are other alternatives)" (Dupuy 2004). These definitions are valid for industry as well as the service sector, for both companies and public administration. Extending it further, a bunch of scholars opine since bureaucracy has been used in many ways, therefore, it is impossible to put it into either the category of structure or that of process (Albrow 1970; Warwick 1974). Interestingly, like that of many others, they also look at bureaucracy from an organizational perspective as suggested by Max Weber. In this backdrop, Albrow suggests seven modern concepts of bureaucracy for its clearer and better understanding. These concepts are (Albrow 1970): bureaucracy as rational organization, bureaucracy as organizational inefficiency, bureaucracy as rule by officials, bureaucracy as public administration, bureaucracy as administration by officials, bureaucracy as the organization, and bureaucracy as modern society. The problem with these concepts of bureaucracy is that they overlap with one another when one is attempting to combine several approaches, i.e., structure, process, etc.

Many researchers (e.g., Friedrich 1949; Hall 1963; Michel 1949) have relied on Weber's definition and description of bureaucracy for their own researches. Almost all of them not only carried forwarded but also extended Weber's work. For example, Gouldner and Udy hold that

“bureaucracy is a form of organization which exists along a number of continua or dimensions” (Gouldner 1950; Udy 1972). Interestingly, they use Weber’s definition, description, and features of bureaucracy. In the same vein, contemporary sociologists have either directly relied upon the Weberian formulations in their discussions (Friedrich 1949; Parsons 1937), or have used selected dimensions based upon the Weberian model (Balu 1956; Dimock 1959; Heady 1959).

Unlike these scholars and researchers, there are some who have criticized Weberian definition and concept of bureaucracy citing it neglects the informal aspects of human relationships and overemphasize on the formal structure within organization. Thus, the human variable is taken for granted. For instance Philip Selznick holds “The approach which identifies bureaucracy with any administrative system based on professionalization and on hierarchical subordination is not accepted here” (Selznick 1943). Therefore, he suggests ‘bureaucratic behavior,’ as the appropriate term, which designates the behavior of agents in social action. Coupled with this, unlike Weber, informal structure is also emphasized as the mechanism or manifestation of bureaucratic patterns. Extending Selznick’s argument Alvin Gouldner (1954, 1955) determines and distinguishes three patterns of bureaucratic behaviour: mock, representative, and punishment-oriented—each with its characteristic values and conflicts. Substantiating the argument of Selznick and Gouldner, Michel Crozier considers bureaucracy “as a part of the social system which consists of a distinctive culture and a system of shared values” (Crozier 1964).

This suggests that there are largely two schools of thought: 1) those who rely on Weber’s concept and definition of bureaucracy; and 2) those who criticise Weberian concept and definition of bureaucracy. The former group emphasises on the formal aspect of bureaucracy while the latter focuses on the informal aspect. For this research project, we will use Weberian concept and definition of bureaucracy as it is most suitable and appropriate, for some logical reasons. To begin with, we are studying the role and performance of bureaucracy in making policies and enforcing laws, codes, and policies for urban development in Lahore—in other words, we will explore and analyse its role in urban sprawl in the city. Therefore, we are treating bureaucracy as a formal organisation of a public sector. We are focusing on its structure, hierarchy, levels, cadres, and working process. Secondly, we are emphasising on the formal structure and the functioning of the organisation rather than the informal aspects of human relationships.

Despite the availability of a plethora of literature on bureaucracy—concept, definition, and hierarchy, some of the researchers, often, confine their studies on bureaucracy to senior-level bureaucrats only. They do not count ‘street-level bureaucrats’ – the term refers to the delivery professionals in health care, policing, education, etc. – in their research (Besley et al. 2021).

Should the research on bureaucracy be confined to the senior level bureaucrats only, or the ‘street-level bureaucrats’ should also be included? This demands a thorough investigation of the core functions and the levels or services/groups/cadres of bureaucracy/bureaucrats. History tells us that, initially, the state had two important or major functions i.e. national defence against the aggressors (Tilly 1985), and the building of infrastructure (Migdal 1988). The latter was primarily assigned to the bureaucracy who were trained especially to collect tax revenue and enforce laws (Besley et al. 2021). This, in turn, ensured its presence as the predominant organizational form. Subsequently, it started dominating policy-making process even in most developed countries – America and few European countries are exception – let alone the developing states (Drucker 1998). This suggests that the bureaucracy has far greater role and influence than we perceive. Therefore, the bureaucrats keep power for decades despite scandals and proven incompetence.

5.2 Hierarchy (Levels/Cadres/Services) of Bureaucracy

Pakistan is one those countries where bureaucrats exert their influence not only to collecting tax revenue and enforcing laws but also formulating policies. It is considered their stronghold. The bureaucracy in Pakistan, as Saeed Shafiq (1999) holds, is not a monolith. There are a number of groups or cadres (e.g., Central Superior Services—CSS, Provincial Management Services—PMS that was previously known as Provincial Public Service Commission, departmental level officials,

authority level officials, etc.) that are relentlessly engaged in a struggle for supremacy. Each group or cadre or service is a unique functional entity.

Remarkably, many of the academicians confine their research or study of bureaucracy to the members of Pakistan Administrative Services (PAS, previously known as District Management Group—DMG). They perceive them as the actual bureaucrats owing to their persistent dominance on positions of strategic decision-making in the secretariat and at the district level. They do not consider the senior bureaucrats of other cadres or services, let alone the street-level bureaucrats.

Contrary, we suggest that the bureaucracy governing urban development comprises officials coming from different services, cadres, and/or levels. To begin with, federal government officials – members of the Central Superior Services (CSS) such as assistant commissioners, deputy commissioners, additional commissioners, commissioners, director general Lahore Development Authority, and the officeholders in the Ministry of Housing and Works. Officials of the Provincial Management Services (PMS, previously known as Public Service Commission—PCS). Employees or officials of the City Development Authority (Lahore Development Authority—LDA) in various capacities such as assistant directors, deputy directors, additional directors, engineers, technical staff, and clerical staff. Members or officials of local government such as assistant directors, deputy directors, additional directors, directors, secretary, and the lower staff. Apart from this, the officials governing both the Defence Housing Authority and the Cantonment Board are also bureaucrats. Thus, all the above mentioned services, cadres, and levels including that of technical staff and ‘street-level bureaucrats’ will be considered as a part of bureaucracy for this research project.

ROLE OF BUREAUCRACY IN URBAN SPRAWL IN LAHORE

Bureaucracy is almost a curse word in Pakistan. Much is blamed on bureaucracy, and rightly so, yet bureaucracy is necessary for managing the affairs of cities. As an organized body of workers, with interlocking roles and skills, it is the only organization that can provide services and meet people’s needs on a mass scale. Urban affairs cannot be dealt with on a personalized, ad-hoc, and case-by-case basis. Bureaucracy is a reality and an integral part of urban administration. It not only plays a key role in devising and preparing but also implementing the policies, plans, and programmes, which are introduced or launched by the government. Though there has been no dearth of urban policies, programmes, and plans in Pakistan, yet the outcomes have not matched expectations (Mohammad A. Qadeer 2014; Ellis and Roberts 2016; Qureshi and Li 2023). Subsequently, the urban development has been a mess, and the cities have been sprawling. Lahore is no exception to it. Therefore, it demands a thorough investigation of bureaucracy’s role in urban development – sprawl – in Lahore.

For this purpose, we make an effort to apply and test five parameters or scales – absence of a single or central regulatory body, public policy for land use zoning and building bylaws, taxation policy for land development and real estate, and transportation and road network policy – that Harvey and Clark (1965) have already tested while studying nature and economics of urban sprawl in the United States.

6.1 Absence of a Single or Central Regulatory Body

The absence of a single or central regulatory body means that there is no single authority or body or agency to govern urban development and to run urban affairs—in other words, to regulate urbanization. Instead, there are multiple competing regulatory agencies or authorities with overlapping jurisdiction, powers, and functions to govern and regulate urban development landscape. It can be said that neither does a single regulatory body have a control over an entire urban area nor do the multiple regulatory bodies have coordination among them. The absence of an integrated and consolidated administration with clear roles and responsibilities and focused vision for urban growth makes the city governance quite challenging (Harvey and Clark 1965; Ahmad and Anjum 2012; Rana and Bhatti 2018; Qureshi and Li 2023). For example, the control

of multiple regulating agencies either may limit in some areas or may overlap in others depending upon the region/area as well as land development policy and/or regulation—for, each of them acting independently without collusion. Both Belind Yuen and Songsu Choi (2012) validate it as “The multiple institutions and their uncoordinated jurisdictions contribute to unconnected and fragmented planning at city level.” Subsequently, an unbound and scattered development with low population and built-up density takes place. Thus, suburban sprawl occurs. This is evident from the 2011 Task Force Report on Urban Development, which states “There is no urban planning, only ‘project-based’ development” (Planning Commission of Pakistan 2011).

Lahore is a prime example of those cities where city administration is fragmented. The city, in the absence of an integrated and consolidated regulatory body or coordination among the bodies or agencies, has a complexed institutional structure – comprising the Lahore Development Authority (LDA), the Metropolitan Corporation Lahore (MCL), and the Lahore Cantonment Board (LCB) and the Defence Housing Authority (DHA)¹⁹ – that governs and regulates urban development landscape. Apart from this, other institutions that are involved in housing development specifically are the Cooperative Housing Societies (CHS) and the private sector (Haque 2014a; Shoaib 2019). Thus, Lahore city is governed by a combination of various local, provincial, and federal agencies that undertake a variety of responsibilities, from urban growth management to infrastructure development, and maintenance to creation of new towns. These multiple agencies, instead of strengthening, weaken the land development control implementation owing to the overlapping responsibilities and administration areas. Moreover, the cumbersome approval process of building plans somewhat propels illegal construction—stay orders from lower courts and political influences add further pressure on unchecked growth in the city (Ahmad and Anjum 2012; Rana and Bhatti 2018; Shoaib 2019).

There are plenty of examples, which highlight the absence of a single regulatory body and the presence of multiple competing regulatory agencies or authorities, and expose the lack of coordination among them over administrative jurisdiction, powers, and functions to govern and regulate urban development landscape in Lahore. To begin with, Lahore Improvement Trust (LIT)—the predecessor of Lahore Development Authority (LDA), and the Lahore Municipal Corporation (LMC) were both absent in developing the first Master Plan of Lahore in 1966, which was undertaken by the Punjab Government under the recommendation of the Second Five Year Plan (1960-1965). The two institutions were deemed to be inept to take up this task, however, they were assigned to implement the plan in their own jurisdictions (Master Plan Project Office Punjab Pakistan 1973). While LMC continued to follow the Master Plan for Greater Lahore (1966-1985), the LDA, perceiving that the 1966 master plan was an inadequate document for its development purposes, in 1980, prepared the structure plan (Lahore Urban Development and Traffic Study—LUDTS, 1981-2000), and started following it even though this plan had no legal status. The LMC, which controlled most of the built-up areas of Lahore, never owned and implemented the LDA 1980 structure plan. The inevitable outcome was that the city ended up with two separate urban land use plans followed by two individual organizations with overlapping functions and territory (Yuen and Choi 2012). The differences over master plans in Lahore among these competing agencies have played a vital role in sprawling the city.

The story of multiple competing regulatory bodies or authorities (with overlapping powers, administrative jurisdiction, and functions) and lack of coordination among them, and difference over policies, plans, and programmes of urban development in Lahore, does not stop here. The city administration of Lahore is fragmented into federal (DHA and LCB), provincial (PHATA and CHS), and local (LDA and MCL), where federal agencies mainly DHA, one of the leading development agencies, does not adhere to the plans and policies of LDA, which is the leading administrative agency with maximum control over plans and policies related to development in Lahore. DHA has developed nine phases over an area of 158,709 Kanal (the area of DHA Lahore is expected to be increased to 312,000 Kanal after the completion of Phase-X, Phase-XI, Phase-II,

¹⁹ Both the LCB and the DHA are under the control of Defence Ministry.

and Phase-XIII) without adhering to the Master Plans and without getting prior approval from LDA. Despite that all these developed areas have already been included in the city areas. Interestingly, DHA has already approved Master Plans for Phase-X, Phase-XI, Phase-II, and Phase-XIII, and is in the process of acquiring land, that too, violating the Master Plan of Lahore, and without any consultation or prior approval from LDA. Subsequently, urban sprawl is taking place. For example, nearly four decades ago, a conflict took place between the DHA and the residents of Charrar Pind—a formerly rural settlement now well within the urban sprawl. The agricultural lands surrounding the village were progressively sold and transformed as housing projects. Today, the village stands within the DHA that serves as modern housing for the affluent classes. Well beyond Charrar Pind, in the southern margins of the city, newly planned housing schemes continue to spring up across what was previously rural hinterland, replacing pre-existing villages (Cermeño 2021).

Therefore, it can be inferred that the present approach lacks mechanism for coordination, seriously hampering effective plan implementation, planning decisions and direction for urban land. The multiplicity of institutions and their uncoordinated jurisdictions contribute to unconnected and fragmented planning at city level. This is evident from Table 1, which illustrates the ballooned number of societies approved by LDA and phases developed by DHA—and a high percentage of vacant plots in these developed and built-up areas. All this is contributing in unconnected and fragmented and unbound and scattered development.

Table 1: Details of Urban Area, Total Plots, and Constructed and Vacant Plots

Developing or Governing Authority or Agency	Total Societies or Phases	Total Area (Kanal)	Total Area (Hectares)	Total Plots	Constructed Plots (Percentage)	Vacant Plots (Percentage)
Lahore Development Authority	372	265,651	13,438.14	209,519	62	38
Defence Housing Authority	9	158,709*	8028.40	21,219	68.1	31.9
Cooperative Societies Department	104	162,817	8236.21	129,332	61	39
Grand Total	485	587,177	29702.76	360,070		

*Source: Documents, Officials, and Real Estate Developers. * The area of DHA Lahore is expected to be increased to 312,000 Kanal after the completion of Phase-X, Phase-XI, Phase-II, and Phase-XIII.*

6.2 Public Policy for Land Use Zoning and Building Bylaws

Public policy supportive to single land use zoning, single-family home, height restrictions both on residential and commercial buildings, and restriction on maximum use of land for commercial purposes in residential colonies is not only favours but also encourages suburban sprawl since it eats up more land for less accommodation (Harvey and Clark 1965). Generally speaking, in developing states like Pakistan, there are six ways through which inefficient use of land is ensured or guaranteed, which, in turn, eats up a large chunk of land for minimum accommodation and causes sprawling. These six ways or methods are: 1) the “Garden City” approach; 2) land use zoning—single land use zoning is preferred over mixed land use zoning, and building bylaws—horizontal expansion over vertical development is preferred; 3) sprawled houses and offices for civil servants, judges, and army officials in the city center; 4) prime state land reserved for stadiums, training academies, and other luxuries; and 5) gifts of land for government officials in

new developments. This is evident from the 2011 Task Force Report on Urban Development, which reads “Not favoring mixed land use, high population and built-up density, and public spaces, the current framework for urban development has seriously affected the quality of architecture and urban design and has suppressed initiatives for design creativity and excellence” (Planning Commission of Pakistan 2011).

6.2.1. *The “Garden City” Approach*

In the early years of independence, in fact, until the 1960s, all Pakistani cities including that of Lahore were demonstrating progress towards downtown development. Then, the “Garden City”²⁰ approach to urban planning was adopted. This was a low-slung suburban development pattern, with excessive weight given to housing. The suburban development incentivized sprawl and neglected downtown development (Cermeño 2021; Groote et al. 1989; Haque 2020; Malik 2014). . Therefore, all Pakistani cities appear to have no downtowns or city centers—dense areas of residential, office, and commercial use combined with entertainment within an almost walkable district. This approach has continued unabated to date—and it has led to Pakistani cities developing with large suburban sprawl. Overall, our cities are designed primarily for housing with minimal space for other activities (this is reflected from the public policy that cities are primarily residential units) (Haque 2014a).

In full accordance with its “Garden City” policy, Model Town is the best off—though, it was established in 1921, however, its extensions were made in post-partition era, the era of “garden city”. New Garden Town is another example of the “garden city” policy. It has a few more green plots than Model Town Extension (Groote et al. 1989). Even the Master Plan for Greater Lahore (1966–1985) proposed a three-tier hierarchy of neighbourhood, district (metropolitan) and divisional (greater district) civic centres, and a 24 kilometer green belt around the city (Imran, Mehmood, and Cheema 2018).

6.2.2. *Land Use Zoning and Building Bylaws*

In Lahore, the traditional development pattern encourages high-density living and mixed land uses but could not be followed due to the dissuasion of existing building bylaws, and zoning regulations (e.g., the absence of mixed land use zones) (Nadeem et al. 2021). Therefore, Lahore, like other cities in Pakistan, does not have a downtown or city center—the dense areas with mixed use buildings (residential, office, commercial, and entertainment) within an almost walkable reach (Haque 2020). Subsequently, it is falling victim to urban sprawl, at the expense of valuable agricultural land, where housing societies with single-family homes and large networks of roads are being preferred over other activities and services such as education, entertainment, offices, retail, and warehousing. This is the result of largely zoning regulations and ban on high rise buildings for commercial purposes let alone the residential. High rise and multi-use zoning are not only discouraged but also penalized, most often. In addition, land use laws, building regulations, and zoning codes are unfriendly to commercial construction, public spaces, and commercial and community activities (Planning Commission of Pakistan 2011; Haque 2020; Hasan 2021).

How do zoning regulations and building bylaws result in sprawl? First of all, zoning codes and building regulations discourage mixed-use and high-rise development. There are no apartment buildings with shops and offices near or within the buildings. Zoning codes also mandate that for new housing, projects developers buy land in hundreds of acres. This results in sprawl primarily

²⁰ The idea of “Garden City” was posited by Ebenezer Howard to avoid huge metropolitan development (Howard 1898, 1902). This concept of city development soon turned into a movement. Therefore, Pakistan was not the only country which adopted this approach, but many other countries including India, South Africa, and the United States also turned towards this urban development approach—e.g., Bangalore, Pinelands, and Kansas were prime examples of “Garden Cities”. To sum up, it can be argued that the colonial hangover affected city plans in many parts of the world.

because hundreds of acres are usually not available within a city. It also encourages big investors who can afford that much land, thus reducing competition. Additionally, it reduces the availability of fertile agricultural land.

Table 2 illustrates rules for development of new housing colonies in Lahore. According to the land development guidelines in Table 2, until 2010, only two per cent of land allocated for new housing in Lahore was allowed to be used for shopping, entertainment, offices, flats, and hotels. Now we have a slight improvement, with five per cent of land allowed to be developed for these purposes.²¹ Whereas the land used for single-family dwelling units has slightly been reduced from 60 per cent to 54 per cent while the per cent of land used for roads remains the same i.e. 25 per cent. This clearly indicates that single use zoning over mixed use zoning is preferred. Furthermore, commercial use of land is often restricted along main roads and these (commercial) properties are heavily taxed (Table 3 shows that only 8.50 per cent of the plots in 372 societies registered with LDA are allocated for commercial use/purposes). (Hameed and Nadeem 2008; Haque 2014a). According to an estimate, in 2015, around 3.09 billion PKR were collected on account of commercial fee—2.80 billion PKR as permanent commercialization fee and 285 million PKR against annual/temporary commercialization fee (Bhatti et al. 2015). Contrary to this, tax is not imposed on the vacant housing plots. Therefore, plenty of plots are lying vacant in several societies. DHA does not follow LDA’s rules for development of new housing colonies in Lahore. Even DHA itself does not have neither hard and fast rules nor guidelines for allocation of commercial area. Therefore, in some phases the percentage of commercial area is very high while in others very low. Total commercial area in nine developed phases of DHA is around 23.07 percent (Phase I: 5%; Phase II: 5%; Phase III: 25%; Phase IV: 15%; Phase V: 10%; Phase VI: 30%; Phase VII: 15%; Phase VIII: 35%; and Phase IX: 30).

Table 2: Rules for Development of New Housing Colonies in Lahore

Per cent of Land For	Until 2010	After 2010
Housing with single-family dwelling units	60	54
Parks	7	7
Commercial (including shopping, entertainment, hotels) offices, leisure, hotels)	2	5
Public schools, public buildings (e.g., libraries)	2	5-10
Graveyards	2	2
Roads	25	25
Miscellaneous	2	2
Other guidelines		<ul style="list-style-type: none"> • Maximum plot size should be 1,000 yards. • Approach roads should be 60 feet and internal roads 40 feet. • One 10-marla plot for solid waste management for every 1,000 plots. • Grid station for WAPDA (if WAPDA requires). • 20 percent of plots up to five marlas (for the low-income).

²¹ Contrary, total commercial area in nine developed phases of DHA is around 23.07 percent (Phase I: 5%; Phase II: 5%; Phase III: 25%; Phase IV: 15%; Phase V: 10%; Phase VI: 30%; Phase VII: 15%; Phase VIII: 35%; and Phase IX: 30). There are no hard and fast rules for allocation of commercial area in DHA.

		<ul style="list-style-type: none"> • Location of tubewell (if WASA requires).
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Source: Public Infrastructure Tables from Pakistan's Annual Plans

Table 3: Percentage of Residential and Commercial Plots in Societies Registered with LDA

Total Societies/Phases	Total Area (Hectares)	Total Plots	Residential Plots	Commercial Plots
372	13,435.94	209,519 (100%)	191,692 (91.50%)	17,827 (8.50%)

Source: Documents, Officials, and Real Estate Developers

Just like land use regulations, building bylaws are also outdated, as is evident from Table 4—LDA's building bylaws on plot size, storeys, ground coverage, Height, and Floor Area Ratio in the year 2007 and 2019 are same. They restrict and penalize high rise, most often. For example, only three storeyed buildings are allowed on plots less than Five Marla and Five Marla and above but less than 10 Marla, whereas four storeyed buildings are allowed on all other plots. In addition, Maximum height and Floor Area Ratio restrictions are also imposed. This clearly discourage vertical development and favours horizontal expansion. The ultimate result is urban sprawl (Lahore Development Authority 2007, 2019). These building bylaws do not apply on DHA. However, the story of DHA's own building bylaws is not so different from those of LDA's. The building bylaws of DHA directs that the maximum height of residential buildings in phase 1 to 4 and 5 to 9 should not exceed 30 feet and 35 feet, respectively. And the covered area of the first floor for a five Marla plots can be 100 per cent of the covered area on the ground floor, whereas for all other plots (e.g., 10 Marla, 1 Kanal, and 2 Kanal) should not exceed 75 per cent of the covered area on the ground floor. Similarly, there are height and Floor Area Ratio restrictions on the commercial buildings/constructions (Defence Housing Authority 2014).

Table 4: LDA's Building Bylaws on Plot Size, Storeys, Ground Coverage, Height, and Floor Area Ratio (2007 and 2019)

Plot Size/Zone	Max No. of Storey (Excluding Basement)	Max Ground Coverage (Percentage)	Max Height (Feet)	Max FAR (Including Basement)
Less than 5-Marla	3	80	38	1:2.4
5 Marla and above but less than 10 Marla	3	75	38	1:2:3
10 Marla & Above but less than 1 Kanal	4	70	45	1:2:8
1 Kanal to 30 Marla	4	65	45	1:2:6
Above 30 Marlas but less than 2-kanals	4	60	45	1:2:4
2-kanals & above	4	55	45	1:2:2

(Source: Lahore Development Authority 2007, 2019)²²

Bureaucracy has a key role in designing and implementing these zoning regulations and building regulations. They have turned Lahore a major vehicle for rent-seeking privilege preservation

²² This table presents LDA's building bylaws on plot size, storey, ground coverage, and FAR in the year 2007 and 2019 without even a single change or amendment.

where zoning and the arbitrary use of public land have become major vehicle for rent distribution. For example, the width of streets, height of homes, size of building lots, amount of space reserved for pedestrians, and even the reasons that one cannot operate a donut store in one's garage are all dictated by zoning regulations. Therefore, the past decades have seen a rapid increase in gated communities comprised exclusively of low-density, single-family dwellings. Three-to-five-story apartment buildings in such communities are rare. And where they are present, such mid-rise buildings are mainly provided for affordability concerns, rather than to improve density.

6.2.3. Sprawled Houses and Offices

Housing for public sector officials has not been monetized. They are offered benefits and perks and privileges. Therefore, they enjoy luxury housing and sprawled office space that take up large areas of main city or central city. For housing, they follow the NIMBy ("not in my backyard") policy. City centers are dominated by housing for civil servants, judges, and army officials. Consequently, land that should be available for mixed-use and high-rise development is blocked (Haque 2020). For example, Governor of Punjab lives in a spacious and luxurious Governor House that spreads over 700 Kanal on Mall Road. Similarly, GOR-I, where majority of the residences are allotted to the officers of Pakistan Administrative Services (Previously District Management Group) covers almost 4620 Kanal and GOR-III covers around 1627 Kanal. All the houses (in fact, bungalows) in these schemes are single-family homes.

6.2.4. Prime State Land Reserved for Stadiums, Training Academies, and Other Luxuries

The government owns large chunks of prime urban land reduces the supply of available land within cities, which in turn also leads to sprawl. Bureaucrats who run cities become increasingly wedded to the American suburban model with endless single-family homes and broad avenues for cars. Of course, they keep prime areas for their government-owned housing and government-subsidized leisure clubs, as well as plots for themselves (Haque 2020). For example, the Mall Road in Lahore – the city's main thoroughfare – is completely owned by the government, almost all the way from the provincial assembly chambers to the airport. In addition, federal and provincial governments own vast amounts of inner-city land which is arbitrarily developed without consultation with the city. Moreover, large amount of land owned by either the federal government or the provincial government is lying vacant. The land for the housing schemes is not acquired from the state or government but private landowners because the state owned land run into delays as the bureaucracy either unintentionally or deliberately do not submit the required documents to the Board of Revenue (Lahore Development Authority 1991).

6.2.5. Gifts of Land for Government Officials in New Developments

A large part of the compensation of government officials – civilian, military, judges, and ministers – consists of prime housing and gifts of land in new developments. The Lahore/DHA model – whereby land is developed by the public sector and given to officials as rewards – has inhibited the emergence of competitive real estate development markets (Haque 2014a). The DHA and the LDA remain the largest land development companies in Lahore. Since every powerful decision-maker gets wealthy through this land allotment system, the drive to suburbanize is reinforced at the cost of city center development.²³ Because of this perk system, real estate development has become a public sector enterprise business and not a commercial activity. Officials are rewarded for government service with gifts of land, and hence prefer to keep land development a public sector activity (Haque 2020). For example, the DHA Lahore, since 1973, has developed 9,000 hectares of land in 9 phases, whereas, LDA has developed 14 regular schemes on 6,123 hectares of land (Anjum and Hameed 2007).

²³ During our discussions with the officials, it was revealed that many provincial and federal level bureaucrats (during their postings in Lahore) and LDA officers are gifted with the plots (and other perks) in exchange for approval of new schemes or societies. In fact, one of the officials claimed that the bureaucrats do not contend with the plots, in fact, they demand share in these societies. Most likely, some of them have shares in the developed housing schemes.

6.3 Taxation Policy for Land Development and Real Estate

The taxation of gains from land development and the mechanics of determining taxable income from real estate developments have emphasized subdivision creation in small and discontinuous increments (Harvey and Clark 1965). Current taxation policy for land development and real estate favours land developers and real estate tycoons. This, in turn, causes sprawl (Haque 2020). For example, in most of the schemes in Lahore, more than half of the plots are inbuilt because bylaws are very flexible and owners of vacant plots have no fear of cancellation and they consider this investment a better safeguard against inflation. Moreover, speculators invest their money in the plots because no cost/taxes are involved in the keeping of vacant plots (for details, see Table 1) (Zaman and Baloch 2011). Contrary to housing properties, commercialization is heavily taxed and complicated process. It is a much debated and politically motivated phenomenon in Lahore. Properties along main roads are often restricted to commercial use, and are heavily taxed. In 2015 alone, 3.09 billion PKR (approx. 29.4736 million USD based on currency exchange rate of 1 PKR = 0.00953834 USD on 8 May 2017) were collected on account of commercialization fee, including 2.80 billion PKR as permanent commercialization fee and 285 million PKR against annual/temporary commercialization fee (Hameed and Nadeem 2008; Rana and Bhatti 2018). Many authors have reported that weak land use and building control and commercialization policies resulted in proliferated haphazard growth in all parts of the city (Hussain and Nadeem 2021).

6.4 Transportation and Road Network Policy

Transportation circumstances and road network policy are catalyst of urban sprawl (Harvey and Clark 1965). Trolley and bus lines produce strip developments and the rapid transit lines have only extended the strips. Primarily, however, it is the automobile which permits access to remote areas and provides the essential condition which allows sprawl to occur. The construction of expressways and super-highways has caused both congestion in the central areas, and the rapid spread of the city at the edge. The development of a highway system often creates land parcels economically unsuited to farming or housing and encourages an unfortunate heterogeneity of uses. Road network and automobile policies, most often than not, complement each other. On the one hand, expressway and highways are built, while on the other, either subsidized schemes are introduced or easy installment loans are given for promoting private automobiles. Most often, such policies are adopted to promote private businesses—a nexus between bureaucracy and businessmen. This, in turn, provides easy access to remote areas on the one hand, and causes sprawl on the other.

Traffic management in Lahore focuses on building roads and corridors for cars. The city has a large network of roads i.e. 14124 kilometer (The Urban Unit 2020) where 6.8 million vehicles (four million in 2015) and 4.2 million motorcycles are currently present, according to the official website of the Capital City Traffic Police Lahore—private vehicles (cars, two-wheelers, and three-wheelers) make for around 95 per cent of total vehicles in Lahore (Capital City Police Lahore 2023).²⁴ The percentage of private vehicles (cars, two-wheelers, and three-wheelers) registered in the year 2012 was 92.94 per cent of total vehicles in Lahore. The percentage of the aforementioned vehicle types in Lahore was recorded 93.37 per cent in 2013, 93.98 per cent in 2014, 94.31 per cent in 2015, and 94.89 per cent in 2016 (Punjab Bureau of Statistics 2017).

In 2008, as Japan International Cooperation Agency (JICA) reports, 1.9 million motorized vehicles were registered in Lahore district. The number of registered vehicles sharply increased by 294 per cent between 2001 and 2008,²⁵ higher than the provincial motorization trend, i.e., 212 per cent during the same period. Among vehicle types, Lahore citizens nowadays show a strong preference for motorcycles, which increased at much faster rate, by 483 per cent during the same period (Japan International Cooperation Agency 2012). According to the Motor Registration

²⁴ The total number of vehicles in the entire province of Punjab are 19.6 million. This shows that Lahore has around 32 per cent of the total vehicles in Punjab.

²⁵ The registered vehicles including motorcycles increased by 36.7 per cent per annum during the same period.

Authority of the Punjab Excise and Taxation Department, 3.2 million motor cycles have been registered in Lahore during 2011 and 2021 (for registered vehicles in Lahore between 1990 and 2023, see Table 5).

Table 5: Registered Vehicles in Lahore (1990 – 2023)

Year	Ambulance	Bus	Delivery Van	Double Cabin	Earth Machinery	Motor Car	Motor Cycle	Rickshaw	Taxi Cab	Tractor	Truck	Grand Total
1990	6	1,168	1,648	9		13,852	21,233	419	643	257	281	39,516
1991	3	1,106	2,449	90	1	12,909	20,952	436	589	170	341	39,046
1992	9	1,291	1,981	206	2	9,964	18,185	432	2,817	229	911	36,027
1993	9	3,559	2,246	246	9	8,756	16,353	626	5,664	415	1,201	39,084
1994	7	290	786	109		8,758	12,389	1,154	509	215	263	24,480
1995	11	182	816	155	1	8,611	12,786	886	419	336	154	24,357
1996	4	195	801	70	2	11,635	20,459	1,802	289	255	129	35,641
1997	17	227	862	59	1	11,285	18,573	2,278	342	230	154	34,028
1998	7	609	928	49	3	12,859	17,002	2,879	375	242	228	35,181
1999	4	703	995	14	1	11,739	19,746	3,884	235	1,779	400	39,500
2000	12	1,211	1,182	46	2	13,383	25,509	2,666	119	499	313	44,942
2001	21	320	985	10	1	14,695	25,077	3,928	96	498	226	45,857
2002	19	809	1,608	25	2	17,283	36,493	3,340	125	516	649	60,869
2003	10	1,289	2,362	61	3	28,544	58,722	7,741	158	802	973	100,665
2004	30	1,376	3,160	76	15	44,329	91,039	10,874	133	1,225	866	153,123
2005	37	2,779	4,778	320	24	50,969	99,088	5,174	95	1,825	1,175	166,264
2006	104	6,077	6,058	327	89	75,082	117,459	774	107	1,840	1,848	209,765
2007	38	3,166	5,707	363	102	77,634	139,405	4,308	81	1,969	2,515	235,288
2008	84	1,210	4,754	176	95	56,712	140,807	6,308	50	1,985	1,457	213,638
2009	54	970	2,700	37	74	39,728	147,905	10,373	20	2,960	1,795	206,616
2010	192	903	2,768	43	91	46,930	196,292	13,954	32	2,907	1,705	265,817

2011	235	1,491	2,814	272	99	51,846	212,905	12,506	363	2,426	1,823	286,780
2012	77	1,507	3,200	389	79	61,229	237,081	9,706	3,025	2,543	1,913	320,749
2013	188	1,774	3,239	354	301	65,834	294,431	11,065	37	2,525	1,885	381,633
2014	80	2,808	3,208	343	192	65,617	286,405	15,310	25	2,627	1,501	378,116
2015	86	1,878	8,897	498	205	83,486	303,266	15,816	6,269	2,325	592	423,318
2016	209	1,860	4,837	448	297	96,447	324,828	16,089	1,528	2,086	1,114	449,743
2017	433	1,861	11,826	502	425	109,505	356,510	14,895	41	2,646	1,457	500,101
2018	158	1,509	4,740	471	339	116,676	388,707	10,522	98	3,039	928	527,187
2019	165	1,138	4,836	342	261	90,760	303,069	9,474	33	1,942	474	412,494
2020	94	551	1,769	267	166	47,322	193,972	3,138	33	903	352	248,567
2021	117	936	3,924	635	287	75,328	301,720	5,858	87	2,520	397	391,809
2022	105	880	3,383	725	196	74,566	243,275	1,454	151	2,806	608	328,149
2023	76	419	1,088	425	61	24,996	97,043	2,295	22	1,429	299	128,153
Grand Total	2701	48,052	107,335	8,162	3,426	1,539,269	4,798,686	212,364	24,610	50,971	30,927	6,826,503

Source: Excise and Taxation Department, Lahore, Punjab

The use of cars and two-wheelers has been facilitated at the expense of other forms of transport such as bicycles, walking, taxis, and buses. With cars and two-wheelers so subsidized, it is not hard to see why the sprawl is spreading (Haque 2020). Tremendously increased demand for urban travel via private automobile is for three important reasons. First, over the past decade or so there has been a rapid increase in the incomes of urban households—meaning that more people can afford to buy cars. Second, over the same period commercial banks have entered the vehicle leasing market and injected significant capital into the auto-leasing business—thereby resulting in a significant increase in automobile sales. Third, most new urban developments for high-income households are located far from urban cores, in areas with little or no public transit availability. Thus, the development of affluent neighborhoods in suburbs has generated additional demand for travel by private automobile (Haider 2014). This clearly reflects the role of public policy – on import of cars and two-wheelers, and non-availability of public transit – where bureaucracy has a vital role in devising and implementing it.

THE ADMINISTRATIVE JURISDICTIONS OF ADMINISTRATIVE AGENCIES AND BODIES

As is mentioned earlier, Lahore is not administratively cohesive. It is being regulated and governed by five separate or independent agencies and bodies but with overlapping administrative jurisdiction. This multiplicity and complexity of the institutions was a continuity of the colonial legacy—for, cities were supposed to be run as municipalities, military

cantonments, improvement trusts, and/or, most likely, a combination of all these (Qureshi and Li 2023). To understand the complexed institutional structure in Lahore one needs to dig out the history and evolution of these institutions.

7.1 Lahore Improvement Trust (LIT)

Both Pakistan and India share a history and have experienced the similar trend of Town Improvement Trusts established by the British transforming into Development Authorities. Both these forms of institutions (Improvement Trusts and Development Authorities) had a similar mandate—to improve the living standards in the city through planned development. Development authorities, in particular, were envisioned to undertake comprehensive and integrated master planning in the face of rapid urbanization that its predecessor – Improvement Trusts – failed to do so because of its institutional set up as a Trust (Ahmad and Anjum 2012).

7.1.1. Reasons for the Creation of Town Improvement Trusts

The rationale behind the creation of this institution – a network of Town Improvement Trusts – was to focus on urban planning for the future development of cities that were rapidly expanding after the Industrial Revolution. Therefore, the formation of Town Improvement Trusts was the direct outcome of sanitary reform being institutionalized further to cover a major portion of urban development. For example, the first Improvement Trusts that were set up in cities like Bombay and Calcutta came out of a direct response to an epidemic break. Bombay Improvement Trust was set up in 1898, immediately following the outbreak of the bubonic plague that forced the local administration to rethink the physical conditions of the city. Secondly, their formation was supplemented by the physical interventions made by the colonial administration in major cities of the subcontinent, which were manifested through the introduction of institutionalized administrative setups that normalized most of the conceptual models upon which they were based (Malik 2014; Shoab 2019).

7.1.2. A History of the Creation of Town Improvement Trusts and their Functions

The Government of India issued a letter in 1917, which noted the first call for Town Improvement legislation within the Northern regions of the subcontinent. Provincial governments were encouraged to draft legislation for this purpose. The United Provinces were first to introduce such legislation in the form of UP Town Improvement Act in the same year, whereas Punjab followed suit in 1922 with the passing of the Punjab Town Improvement Act. The function of an Improvement Trust, as suggested by Colonel W. Forster, Sanitary Commissioner at the Indian Medical Service of Punjab, in 1919, would include the (Aggarawala 1945, 70): 1) improving existing insanitary areas; 2) preparing street schemes; 3) providing housing accommodation for the poor classes and those dispossessed under an improvement scheme; and 4) town planning.

7.1.3. Establishment of Lahore Improvement Trust (LIT)

Lahore Improvement Trust (LIT) was established in 1936 under Punjab Town Improvement Trust Act, 1922, which reads as:

...in view of the fact that the Bill is designed to meet the need for urgent sanitary reform and for town expansion in our big cities through the agency of specially constituted Trusts, it undoubtedly supplies a keenly felt need... As we all know the Municipal Committees of Lahore and Amritsar are overworked and the functions of the Trusts are rather of different nature and cannot be carried out by the municipal committees sitting in a large body. It is for this purpose that Trusts have been created in other provinces and are proposed to be created in this province to carry out sanitary improvements in big towns expeditiously and without delay...(Aggarawala 1945, 70)

After almost four years of the enactment of Punjab Town Improvement Act, 1922, the Lahore Improvement Committee was created in 1926, but the LIT was constituted later in 1936, after amendments were made in Improvement Act upon dissolution of the Municipal Committee. The strong focus on concern of sanitation still resonated in the calls for the establishment of the Trust but these did not amount to an actual response on part of the LIT when it was formed because Lahore fortunately never suffered from a massive plague outbreak as did Bombay and Calcutta. This particular concern with sanitation provided the initial impetus for the formation of the Trust, but did contribute to development of its operational values, which were derived from the structural setup it inherited from previous Trusts (Malik 2014). For example, Martin Basel Sullivan²⁶ holds that the specific call for LIT was essentially a Sanitary board with an additional town planner—methods and objectives were equated to be similar:

...all that is wanted is a body like the existing Sanitary Board plus a fully qualified town planner and his staff permanently attached to it. With this agency and tribunal based on that described in Section 58 of the Punjab Town Improvement Act, 1922, everything required can be done (Sullivan 1928).

Therefore, Sullivan’s “Note for the use of Lahore Improvement Trust Committee and of the Lahore Improvement Trust when formed” explicitly identified the Punjab Town Improvement Act, 1922, as the major power-force behind the formation of the Trust, which placed “the wildest powers in the hands of a Trust to deal with every nature of areas, built-up and otherwise” (Sullivan 1928).

This is important to note for two reasons. First, LIT was constituted to be driven mainly by the Punjab Town Improvement Act, 1922, as opposed to being operated under two separate jurisdictions, which included the Punjab Municipal Act, 1911, and the aforementioned Town Improvement Act. This was perhaps due to the temporary dissolution of the Municipal Committee in that time period.²⁷ The operation of the Trust under two separate jurisdictions was to create a distinction between the kinds of projects that the Trust was to undertake, which caused a somewhat unclear method of operation, as can be noted within its annual reports. The Trust labeled all work carried out under the Punjab Municipal Act, 1911, as ‘Restrictive Development’. Schemes under this label were meant to “provide for the division of the area into building plots and streets”, as well as to “impose restrictions on the type of buildings to be erected” (Government of Punjab 1941). Under this Act, the Trust could prepare town planning schemes for private landowners in line with the kind of urban development they were to envision and implement under the Punjab Town Improvement Act, 1922. In this capacity, they were merely acting as an advisory body. Under the Punjab Town Improvement Act, 1922, by comparison, the Trust was empowered to “acquire areas of land within its jurisdiction at market rates, to plan and resell them subject to the sanction of Government” (Government of Punjab 1941). This kind of development was labeled as Positive Development by the Trust. The legal procedures of acquisition and limited financial conditions of the Trust however meant that such kind of development was to not begin until 1940, four years after the formation of the Trust. The financial structure of the Trust played a prominent role in the slow start of this kind of development.

The second thing to note here is that there was a distinctive focus of the Trust for a large portion of its lifetime on housing. This was clearly in defiance of Sullivan’s invocation of the Trust being responsible for “every nature of areas”. This focus on housing was later identified as a problematic approach by the reports themselves, and shortsighted amends were attempted. These were not enough to formulate an overall cohesive set of guidelines for Lahore’s urban development. One example of such an oversight is mentioned in 1943-44 report where the “rigid adherence to zoning in the larger scheme areas” had led to a strong segregation of residential and

²⁶ Basel Martine Sullivan would later act as the first Chairman of Lahore Improvement Trust.

²⁷ Lahore Municipal Corporation was established in 1940. It appears however, that the Trust continued to provide consultation services under the Punjab Municipal Act, 1911 and the Municipal Corporation acted as the enforcing body.

commercial zones in the Civil Station Area resulting in major inconvenience to the residents of the area (Malik 2014).

7.1.4. Organisational Structure of LIT

LIT's organisational structure comprised of two separate bodies: Trustees and Associates. The Trustees of the body included five members appointed by the Provincial Government, namely the Chairman of the Board who was a senior government civil servant, i.e. Deputy Commissioner of Lahore, chairman of Lahore Municipal Corporation and three senior civil servants, the remaining three were elected from councilors of the Lahore Municipal Corporation. The Associates usually included about eight officers from different divisions, such as a Town Planner, Health Officers, Consulting Engineers, Chief Officer of Lahore Corporation, etc. These associates would mostly be working between two departments, as is evident from the war years when they were mostly involved in works in their other respective departments (Malik 2014; Shoaib 2019). U. A. Coates acted as the Town Planner for the Trust from 1939 up until 1947. From 1944 to 1947, the Trust also employed an Architect by the name of N. B. Shroff, whose primary responsibility seems to have been the design of the model houses in one of the first schemes designed and developed by the Trust under the name of Rifle Range Scheme (Government of Punjab 1946). He is not mentioned in regards to any other development under the Trust.

One of the most problematic structural issues with the Trust however was the fact that it was a Trust. This meant that it operated on behalf of the government to acquire land, develop it and resell it to the public. The funds for this would be acquired in the form of annual government loans that would have to be repaid with an interest rate of two per cent, half a percent higher than the normal borrowing rate from the Government at that time. This was after an initial cash grant of Rs. 10,000 from the government at the time of establishment in 1936. The loan interest rate seems to have increased up to four per cent by the time of the 1942-year report (Government of Punjab 1942). Under the section 68(1) of the Punjab Town Improvement Act, 1922, the Trust was also entitled to about two per cent of the Municipality's budget for development projects. However, it was the government loans on which the main financial structure of the Trust was based (Malik 2014). Every year the Trust had to apply for a loan which slowed down the process of development due to the annual cycle.

7.1.5. The Ultimate Fate of LIT

The British-inherited legal and institutional structure such as Municipalities, Cantonments, and Improvement Trusts continued to function up until the 1960s in Pakistan (Ahmad and Anjum 2012).

By 1967 both Lahore Municipal Corporation (LMC) and LIT were responsible to the Ministry of Basic Democracies and Local Government (World Bank 1974). The area under LIT's jurisdiction was 128 square miles and included LMC, LCB, and West Pakistan Railway depots area as well. LIT performed schemes of land acquisition, housing, slum clearance, and general public works as well as providing sanitary facilities to the developed land (World Bank, 1974). However, with the passage of time, LIT's importance started waning. Why did the LIT lose its importance? LIT's waning importance as an institution for urban development is apparent in the fact that LIT and LMC were both absent in developing the first Master Plan for Greater Lahore in 1966, which was undertaken by the Punjab Government under the recommendation of the Second Five Year Plan (1960-1965). The two institutions were deemed to be inept to take up this task citing there were no adequate numbers of planners both in the LMC and in LIT to understand, interpret, and implement the Master Plan.²⁸ However, they were assigned to implement the plan in their own jurisdictions (Hameed and Nadeem 2008; Shoaib 2019). LMC continued following the Plan. But LDA, the successor of LIT, soon perceived that the Master Plan was not useful to it and got prepared in 1980, a so called Structure Plan under the title of Lahore Urban development and

²⁸ Interestingly, majority of the members of the Master Plan Committee were bureaucrats.

Traffic Study (LUDTS)²⁹ and started following it (World Bank 1983b). The LMC, which was controlling most of the built-up parts of Lahore, however, never owned and implemented this new Plan. Thus, the city of Lahore was having two separate plans been followed by two different organisations with overlapping functions and territories and having no appropriate mechanisms for coordination.

7.2 Lahore Development Authority (LDA)

The Trust's tenure ended in 1975 with its transition into Lahore Development Authority (LDA). This was the time period when development began in the extreme outskirts of the city under private and military development bodies. By this time, however, schemes such as Gulberg, Samanabad and Shadbagh had set the pattern for development within the city (Malik 2014).

7.2.1. Reasons for the Creation of LDA

Why was LDA created? The idea of "development" in response to the crisis of the 1940s in postcolonial states was an attempt to break away from the colonial era, in which development was focused on strengthening the colonial rule (Legg 2006). It was the urgency to deal with the housing crisis spurred by migration after the Partition of 1947 that the need for institutionalized planning was felt more (Talbot 2006). However, failure of LIT to respond adequately to the crisis is part of the story why the need for a development authority was felt. In his research thesis, Masood Khan offers us a statistical overview of housing in the city under the Trust (Khan 1983, 94). From 1947 up until 1975, when the Trust was dissolved, the LIT had developed 8469 plots for occupation. Of these, about 85 per cent plots ranged from sizes between an acre to about 2250 square feet. These were clearly meant to house detached or semi-detached houses, much like the bungalow typology introduced by the colonial administration. Khan then continues to compare with the population growth of the city between 1951 and 1975, which increased by 200 per cent during that time period:

This meant that, with an average family size of 6 persons, there was an increase of 275,000 households during that time period. A comparison with the 8469 plots provided by the Trust over the period 1947–1975 indicates the general ethical and social trends of those years. The remaining 266,500 households were either absorbed into the city's fabric by a densification process utilizing unused land or old houses within the city, or settled in privately parcelled, unserviced or partially serviced, land in areas of the city less favored by the elite oriented planning agencies (M. A. Khan 1983).

To sum up, there were four major reasons for disbanding LIT and creating LDA (Malik 2014; Shoaib 2019; World Bank 1983a, 1983b): 1) It was a trust which meant that it was dependent on loans from the provincial government and could not indulge in commercial or profit making enterprises to invest in other projects, hence, a corporate body was seen as an institutional structure that would be more suitable for fulfilling these objectives; 2) It failed to provide housing stock for low income groups and hence LDA was established to achieve this objective; 3) Based on the literature review of LIT and other improvement trusts in India including Delhi Improvement Trust and Bombay Improvement Trust, we can ascertain that LDA came as a result of increased pressures of urbanization and LIT's failure to plan for the post-Partition violence and resettlement; and 4) the Master Plan emphasized on the creation of single planning authority out of LMC and LIT to manage and guide the development of city and act as custodian of the Plan.

²⁹ The Lahore Urban Development and Traffic Study (LUDTS) undertaken by the World Bank in collaboration with LDA in 1980 is seen as the second comprehensive master plan for Lahore (for details see World Bank 1983b).

7.2.2. Creation of LDA

LDA was created under the legislation of the Punjab Assembly when it passed the LDA Act in March, assented by the Governor of Punjab on 3rd April 1975 (Government of Punjab 1975). LDA is a financially autonomous body under the Secretary Housing and Physical Planning of Punjab. The rationale behind this Act was that “it was expedient in the public interest to establish a comprehensive system of metropolitan planning development in order to improve quality of life in the metropolitan area of Lahore” (Government of Punjab 1975).

7.2.3. Organisational Structure of LDA

In terms of its organisational structure, the Chairman of the Authority, at its inception was the Commissioner of Lahore and the Chief Minister Punjab in later years (World Bank 1980).³⁰ The Authority included nine members in addition to the chairmen of Municipal Committees, the Managing Directors of the independent agencies that LDA had the power to create under its board such as WASA and the Director General/Chief executive, a senior civil servant (Government of Punjab 1975). LDA has a number of key areas that it works on, including *Katchi Abadis*, hidden properties, estate management, land development, commercialization, and housing (Government of Punjab 1975). Each of these areas have a director and all of these come under the Urban Development Wing. There is also a section of coordination and implementation.

Despite an attempt to bring elected representatives of the LMC on the board for better coordination, this aim remained unfulfilled, partly because of the fact that the Authority was largely comprised of senior civil servants/bureaucrats. However, the seeds for turning LDA into a bureaucratic institution were not sown merely by the number of bureaucrats on the board. This was partly due to larger political context of Punjab and the rest of Pakistan as well, where local governments were barely allowed to thrive. Moreover, the initial bureaucratic nature of LDA was also a legacy of its predecessors, the LIT (Shoib 2019).

7.2.4. LDA as an Institution and its Jurisdiction

LDA, as an institution, was not much different from LIT and its establishment in the postcolonial city was aimed to intensify planned development with new legislative and regulations, and a more financially autonomous institutional structure (Shoib 2019). Moreover, even though postcolonial development was seen as something outside of politics (Mehra 2013), there is a symbiotic relationship between the two.³¹ Building on this, I argue that political influence in the form of the Chief Minister Punjab, being its Chairman for a large chunk of its time, enabled LDA to be more flexible and responsive to changing circumstances of its projects. This is to say that LDA has been able to push for policy and regulatory amendments to facilitate its operations, rather than being dictated by law. This highlights that it is not policies that dictate institutions but institutions dictating policies.

A critical analysis of the LDA's history, jurisdiction, and functioning suggests that its jurisdiction since 1980s has extended over Lahore. This was the time when most cooperative housing societies functioning under the Cooperative Societies Act developed housing schemes, that were aimed to provide subsidized plots to its employees but also sold plots on open auction to non-employees. Similarly, LDA was undertaking completion of schemes started by LIT and developing new ones (Shoib 2019; Gazdar 2009). LDA's earlier schemes also demonstrate that some of them such as Allama Iqbal Town were being built in close proximity to already established housing colonies that were then incorporated into the LDA housing scheme instead of in the far periphery

³⁰ Changes in who headed LDA depended on changes made in the constitution under military or democratic regimes and in the local government system. Even after the devolution plan of 2001 in which local governments were greatly empowered, LDA managed to stay under the provincial government rather than the city district government after Lahore Development Authority Ordinance, 2002, was passed.

³¹ LDA was a continuation of the LIT in many ways, with a supposedly more comprehensive approach to planning, and it faced similar challenges as its predecessor and failed to achieve one of the objectives this parallel institutional structure set out to achieve: providing housing for the low-income groups.

of the city. LDA's housing schemes were not built on state land but were acquired from private landowners. Central government land was not to be included in the acquired land of the scheme and transfer of state land ran into delays as the district commissioners were not able to submit all documents required to the Board of Revenue (Lahore Development Authority 1991).

LDA already had building control in its controlled area. However, as the real estate boom took momentum and reached its peak in the early 2000s, a model of gated communities or what are locally known as housing societies came about. These were built by private developers and housing cooperative societies were built by public sector agencies. In a poor economic milieu, construction business was on the rise and the safest investment for people was to invest in plots. In response to this and a rising incidence of illegal and unapproved housing schemes, LDA drafted its Private Housing Scheme Rules in early 2000s. This was to ensure that LDA and Town Municipal Administration (TMA) remain the only competent authorities that had control over private housing scheme approvals (Shoaib 2019).

However, in 2013, LDA's jurisdiction was extended through the Provincial Government, amending the LDA Act of 1975. The jurisdiction was extended to all of Lahore district and to districts of Sheikhpura, Nankana and Kasur, which now makes up the Lahore Division (Government of Punjab 2013). LDA's justification for this decision was that TMAs that are a tier of the Metropolitan Corporation Lahore (MCL) were seen as incompetent and inefficient in approving buildings and housing scheme plans. It was noted that TMA had approved a lot of buildings and housing schemes that did not satisfy the standards. However, there was backlash on this and critics argued that LDA lacked the capacity to undertake more operations that it already had and a lot of the development in its existing schemes, such as Johar Town, were still pending. It is important to understand that LDA's jurisdiction in Lahore district does not include building control in controlled areas of TMA, these are usually in the old built-up neighborhoods and areas. Moreover, LDA's jurisdiction also excludes Cantonment Area and Defence Housing Authority (Shoaib 2019).

Apart from developing and regulating housing schemes, LDA controls commercialization in Lahore district. Commercialization was previously under the TMA and had been a primary source of revenue. This revenue source now makes up most of LDA's income. The ease of land use conversion has not only empowered LDA as an institution while weakening TMAs but it has also attracted protests from residents of middle or upper income groups living in residential areas and their daily lives being disturbed by an increase in traffic that the newly commercialized areas attract (Shoaib 2019).

Moreover, another power that LDA has but LMC does not is the task of land development, which LDA uses to build housing societies. It should also be noted that the recent debates on the inter-governmental power as a result of LDA's increasing powers stem from the fact that LDA's existence has produced a parallel structure of urban governance where there are overlapping jurisdiction between LDA and Metropolitan Corporation Lahore. Despite that, LDA only regulates and develops a small part of Lahore—nearly 20 per cent (PIDE 2020).³²

Overall, LDA is responsible for the construction and maintenance of infrastructural facilities and the creation of a comprehensive development plan for the city. It has three main functional units dealing with Urban Development, Water and Sanitation, and Traffic Planning (Rana and Bhatti 2018). In addition, the function of master planning has also been entrusted to LDA (Hussain and Nadeem 2021).

7.3 Metropolitan Corporation Lahore (MCL)

Metropolitan Corporation Lahore (MCL), having Tehsil Municipal Administrations (TMAs) as its tiers, also has a jurisdiction in spatial planning. MCL has a territorial jurisdiction that is further divided into nine zones or towns—Aziz Bhatti, Cantonment, Data Gunj Bakhsh, Gulberg, Iqbal,

³² Interestingly, this figure seems wrong. The data that we have collected from the officials of LDA through unofficial means suggests that LDA controls around 45 per cent of Lahore.

Nishter, Ravi, Samanabad, Shalamar, and Wagha (Haque 2020). According to the Punjab Local Government Act 2013, Lahore Municipal Corporation (LMC) – a tier of MCL – can devolve powers to the Union Council level, which is the lowest tier of local government. In terms of LDA brand of master planning, this task can be done by the LMC, which to some extent it was doing before LDA extended its jurisdiction in 2013. As a result, LDA has come under attack.³³

7.3.3. MCL and LDA as Parallel Structures: Conflict over Jurisdiction

It is alleged that LDA's increasing powers stem from the fact that LDA's existence has produced a parallel structure of urban governance where there are overlapping jurisdiction between LDA and MCL. These arguments are usually based on the premise that LDA is overstepping its mandate and taking away key revenue sources and mandate of the local government, further weakening it. However, while discussing LDA's current role, it needs to be taken into account that Municipal Corporations were historically seen as responsible for maintenance work rather than development or urban planning, even if the most recent local government reforms give some of these responsibilities to MCL. Moreover, historically the federal and provincial level of government has been so strong that local government systems have not been allowed to work or flourish for long (Shoab 2019). Therefore, it is argued that this parallel structure – of inter-governmental powers – is not a new one. It was established when the British created LIT in 1936.³⁴ The rationale behind LIT's creation was that development and planning will be efficient if its outside the purview of politics (Malik 2014). Moreover, the British did not want to give power to the local representatives, who were increasingly dominating Lahore Municipal Council to undertake capital development works (Mehra 2013). Therefore, development authorities' unelected and technocratic characteristic was seen as its strength.

Before the establishment of LIT in 1936, the Lahore Municipal Act, 1884, had allowed the Municipal Committee to regulate building practices by stipulating the requirement of approval by the Committee prior to approval. In any case, this sort of a narrative allows us to believe that some sort of steps was taken by the local population of Lahore in terms of physical remodeling of their living spaces to improve their living conditions. These developments were by nature one with a slow onset and thus reflected a very limited pace of change towards improved urban living.

By 1967 both LMC was responsible to the Ministry of Basic Democracies and fell under the jurisdiction of LIT (World Bank 1974). This was the year when municipal facilities of water, sewerage, and drainage were handed over to the LIT from the LMC because the latter had incurred financial deficits due to its inefficient operations, charging inadequate rates, poor billing, and collection and because a large chunk of the water produced was supplied free of charge (World Bank 1974).

Just like LIT, LMC was also absent in developing the first Master Plan of Lahore in 1966. The two institutions were deemed to be inept to take up this task, however, they were assigned to implement the plan in their own jurisdictions. The Plan had a few recommendations and among them, the establishment of a Planning Authority was the most important. This was based on the recognition of the problematic nature of having multiple regulatory bodies to be responsible for the urban development. The Planning Authority would act as a coordination body between different relevant institutions that were responsible for urban development in Lahore—these included the Lahore Improvement Trust, Lahore Municipal Corporation, Lahore Cantonment Board, and the Provincial Government. Some of them had overlapping jurisdictions. LIT and Provincial Government operated within its own schemes whereas the LMC operated in all areas

³³ The statutory local government for Lahore (excluding the Cantonment) is the Lahore Municipal Corporation (LMC) but planning powers, including land use and building control and land development, are vested in the Lahore Development Authority (LDA).

³⁴ This was the beginning of the creation of parallel structures for urban governance, that remains till today. Centralized agencies dominated by nominated officials rather than elected ones were seen as a better model to propel planning and development. Therefore, this parallel structure has been in existence since LIT's establishment and LDA in this way is a mere continuation of the British legacy.

within the municipal limits except the ones under the aforementioned agencies. Lahore Cantonment Board operated in its controlled area with its own constitution and set of rules (Malik 2014).

This suggests that strengthening of institutional capacity was focused towards LDA and its predecessor rather than LMC, which was primarily seen as a body to maintain municipal services rather than as an agency for planning and implementing integrated urban development. For example, LMC was identified along with LDA as the agency to be primarily responsible for project (The Lahore Urban Development and Traffic Study 1980) execution but technical assistance for LMC was limited to street maintenance and solid waste management studies as per the areas that come under its purview and jurisdiction. LDA was providing funding for land, infrastructure, and civil works while LMC was providing funding for the solid waste management equipment and study (World Bank 1980). LDA was being empowered and promoted at the cost of TMAs, which are now a tier of the MCL. TMAs were seen as incompetent and inefficient in approving buildings and housing scheme plans. It was noted that TMAs had approved a lot of buildings and housing schemes that did not satisfy the standards (Shoab 2019).³⁵ Contrary, despite LIT's failure to provide housing for the low income groups and its inability to handle the additional responsibilities, municipal facilities of water, sewerage, and drainage were handed over to it from LMC in February 1967 (Malik 2014).

Currently, both LMC and LDA coordinate at the planning level, as they comply to the same master plan, but not at the execution level necessarily. This, however, has resulted in challenges for the two institutions and for residents in areas where they are not sure which institution to reach out to for development works. As a result, residents in these areas approach the person most accessible to them—the locally elected politician or the politically influential. This leads to piecemeal development. The root cause of blurry or overlapping jurisdiction is embedded in the Lahore Development Act itself, where the Authority has been given the power to extend or change its controlled area at any time and for any reason (Government of Punjab 1975).

7.4 Lahore Cantonment Board (LCB)

As is mentioned earlier on, Lahore Cantonment Board (LCB) is one of the five key agencies that administer Lahore city. Just like LDA has its roots in LIT—a colonial institution, the Cantonment Board also has its roots in a colonial Act—Cantonment Act 1924. The Cantonment Act, promulgated on 16 February 1924 (Government of India 1924), consolidates and amends the administrative functions of Cantonments in Pakistan (Ahmad and Anjum 2012). The Act states that, “Building Control within the limits of the Cantonment Board concerned would be regulated under the provisions of this act and that the Provincial Law on the subject would not be applicable to the buildings erected or intended to be constructed on a plot situated within the territorial limits of the Cantonment Board concerned” (Government of India 1924)(Government of India, 1924). The act also enabled Cantonments to make their own by-laws for governing local matters that require particular treatments. Clause (viii) of the act defined the scope and powers of Military Authorities and gave them the final say in matters such as the erection or re-erection of buildings. Based on the urgency of the Cantonments to address emerging issues within their limits, and on the spatial expansion of military colonies, the government of Pakistan passed the Ordinance CXXXVII in 2002 (Government of Pakistan 2002). Various sections and subsections pertaining to the planning, development and management of Cantonment areas are as follows: Section (16) of the Cantonment Ordinance explains that the Cantonment administration shall “prepare spatial/master plans for its local areas in collaboration with union administration including plans for land-use and zoning. It shall execute and manage the plan after the cantonment board gives approval...”; and Section 15(2c) explains that Cantonment officers (Planning) shall be responsible for “spatial planning and land use control, building control and implementation of development plans” (Government of Pakistan 2002). These regulations explicitly declare that Cantonment

³⁵ It is important to understand that LDA's jurisdiction in Lahore district does not include building control in controlled areas of TMA, these are usually in the old built up neighborhoods and areas.

administrations shall prepare and execute development plans for their respective areas and shall exercise control over zoning, land subdivision, land-use, building, and land development (Ahmad and Anjum 2012). Cantonment Boards work directly under the Federal Defense Ministry and are not responsible for following the plans of Local Planning Agencies (LPAs). The monitoring and management of all municipal services is to be performed by the Cantonment administration (Ahmad and Anjum 2012). The Cantonment board is empowered by Section (16 and 244) to generate funds for implementing development plans within its jurisdiction. The Presidential Cantonment Order of 1979 empowered Cantonments to collect immovable property tax and an entertainment duty in their respective jurisdictions. Unlike local governments, which receive their share of property taxes after they have been levied and collected by the province and subjected to a 15 percent retention fee, Cantonment Boards have the power to collect property taxes and remit 15 per cent to the government of the province in which they are situated. The cantonment law is applicable only to development associated with the Directorate of Military Land and Cantonment (MLC) (Ahmad and Anjum 2012).

7.5 Defence Housing Authority (DHA)

The Defence Housing Authority (DHA) is another agency that works under military headquarters and can develop land for the benefit of the armed forces. It is one of the largest land developing agencies in Pakistan. It exists in almost all major cities of Pakistan and has separate laws for development projects in their respective areas (Government of Pakistan 2007).

7.5.1. A History of the Creation of DHA

The history of the establishment of DHA goes back to 1973 when Civil and Defence Housing Society Lahore was created. In 1975, it was renamed as Lahore Cantonment Co-Operative Housing Society (LCCHS) and was registered with Punjab Government (Registrar Cooperative Punjab). The business of the Society was carried out through a Management Committee (MC) consisting of 11-15 members. However, a row/conflict occurred over casting vote through ballot for electing MC members and making policy decisions in 1989. The matter was taken to the court by some members. In 1991, Lahore High Court order to transfer all the powers of MC to the Corps Commander Lahore. The society was subsequently converted to DHA Lahore in 1999 through a Provincial Ordinance. However, it was federalized in 2002, which was validated by the Parliament in 2004. Now DHA is entirely a changed organization. It now has reinforced powers and the jurisdiction to acquire land anywhere in Lahore (Malik 2014; Qureshi and Li 2023).

7.5.2. Purposes or Functions of DHA

Initially, DHA aimed at providing subsidised plots to its employees, i.e. defense/military personnel. However, the DHAs across the country became increasingly notorious as it moved away from the welfare organisation model that catered to its employees, to a commercial entity that developed elite enclaves without accountability (Qureshi and Li 2023). These elite housing enclaves were established mostly on vast agricultural state land that was gifted to mostly high ranking military personnel for their services, a practice that was a remnant of the British administration (Gazdar 2009). However, once DHA started expanding, it subsumed more agricultural land and villages in its surroundings, for example Charrar Pind, and a lot of the times land was acquired through sheer force. As the DHA was the only authority that could develop in its controlled area, the landowners that were selling their land had little choice but to sell at the value given to them (Cermeño 2021).

The real estate boom of 1980s and 1990s brought in foreign investment for development that the DHA, just like the LDA, capitalized on (Gazdar 2009). This is evident from the fact that the DHA has been developing Lahore city in its suburbs, mainly in South and East. Despite controlling almost a third of the area of metropolitan Lahore, its low-slung suburban model houses only

about 150,000 people (for details see, Cermeño 2021; Haque 2020). However, the latest available number count is 378,000 (Qureshi and Li 2023).³⁶

CONCLUSION

To conclude, Lahore has different patterns of urbanisation in different times i.e., pre-colonial, colonial, and post-colonial. While its history can be accurately mapped from the seventh century, certain references can be found to a settlement at the location of Lahore as far back as the first century. It was however under the Mughals that the city gained most prominence. The Mughals constructed gardens and forts taking it to the heights of glory and grandeur. Lahore had enjoyed patronage under the likes of Akbar, who built a fort atop the old Lahore citadel, Shah Jahan, who remodeled the fort, and Aurangzeb, who was responsible for the construction of the Badshahi Mosque amongst other such monumental structures. Under their patronage, the city seems to have spanned far longer than its extents in the mid-eighteenth century. However, beyond Shah Jahan's reign and up until the rise of Sikh power in Punjab in the last quarter of the eighteenth century, Lahore lost the heightened patronage it had enjoyed in the sixteenth and seventeenth centuries.

The times under the numerous Sikh rulers after the Mughals lost control of the city in the 1770's are portrayed as grim times for the city. The subsequent administrators of Lahore, a long string of Sikh rulers, did not contribute to the city's infrastructure in the same manner as the Mughals and thus is registered to be the time when the city's infrastructure started degrading. It was under Ranjit Singh (1801-1839) when the (re)construction of the city was started. Despite a surge of (re)construction, its extents remained largely contained within the boundaries of the Walled City. Most large-scale structures (e.g., Nau Nehal Singh Haveli and Wazir Dhayan Singh Haveli) were constructed within the extents of the Walled City, whereas gardens and country estates were spread outside the city, mainly on the route towards Shalimar Garden.

Pre-colonial glory of olden Lahore had faded, which, the British, later on, tried to restore or reinstate – making a better and modern city – acclaim local historians and the British travelling through the city. Most of the growth occurred towards southeast of the Walled City, which focused on developing civil lines/station, housing, colleges, schools, and gardens. An army cantonment plan was laid out that still echoes the garden city concept. Coupled with this, a variety of housing infrastructure such as government quarters, officer's colonies, and administrative buildings were constructed, which are still being used by the government employees.

There were two distinct qualities to how Lahore was perceived. As a major center for many powerful dynasties before the arrival of the British, it was conceived as a city that was at one time a magnificent city, but which had now lost all its glory and had left behind squalid living quarters within the Walled City that were unfit for human habitation. It was the British who were now responsible for preservation of that lost heritage, and it was them who decided what was worthy of being preserved and what needed to be replaced. And then there was the Lahore that the British had constructed or co-opted, a modern Lahore. In this construction, it was spaces such as the Cantonment, the Civil Station and the Mall Road that figured almost exclusively. As the footprint of the physical interventions the British made in the city grew stronger and stronger, the local indigenous settlements and neighborhoods that not only existed in the Walled City but that had developed over time around the city environs organically were relegated more and more outside the dominant discourses of how the city was projected and planned for.

Trends of urbanisation in post-colonial Lahore, unlike pre-colonial and colonial, were altogether different. For example, the era between the 1950s and the 1970s was dominated by government-led housing schemes such as Samanabad (1950), Gulberg (1952), Wahdat Colony (1958), Allama

³⁶ DHA covers almost 27 per cent of the total area of Lahore. The area of DHA Lahore is expected to be increased from 158,709 Kanal to 312,000 Kanal after the completion of Phase-X, Phase-XI, Phase-II, and Phase-XIII.

Iqbal Town and Township (1970s). However, since the 1980s, private sector led developments such as Bahria Town and those of the DHA have dominated the south-western and eastern parts of Lahore. Major developments occurred around the late 1960s. The city grew along the south and southwest corridors of Ferozpur Road and Multan Road. Urbanisation towards the east and west was limited by the Indian border and the river Ravi. This trend of urbanisation in Lahore did not remain intact but changed in 1975—the year marked the creation of the LDA, which spurred an era of private sector led and financed housing developments commonly known as ‘housing schemes’. LDA is the main government agency for developing housing schemes. So far LDA has self-developed around 43 schemes with approximately 123,000 residential plots and 3,400 commercial plots. Apart from LDA, DHA has developed and is developing an estimated total area of 158,709 Kanal across its nine phases to the east and southeast of Lahore. The area on which DHA stands today was apparently restricted for development to preserve the green lands and to protect the Indian border to the east of Lahore.

Though the trends of urbanisation in the pre-colonial, colonial, and mainly, post-colonial Lahore hint that the city has been sprawling yet we have made a detailed analysis of the measures to gauge urban sprawl in the city particularly by applying them one by one in the post-colonial era. Their results corroborate the trends of urbanisation i.e., the city has been sprawling.

To begin, there has been a rapid conversion of large swathes of agricultural land to urban development, which in turn, has been causing swift increase in the number of housing societies—many of which as gated communities—at the outskirts of Lahore. For example, the built-up of the district Lahore increased from 438 sq. km. in 2000 to 773 sq. km. in 2020; where the cropland area decreased from 1194 sq. km. in 2000 to 924 sq. km. in 2020. This suggests that 270 sq. km. of the cropland area was converted to urban area in the short span of twenty years only.

Secondly, the built-up area of Lahore increased from 64.43 sq. km. in 1966 to 84.54 sq. km. in 1988; and from 179.77 sq. km. in 2000 to 598.30 sq. km. in 2017. The spatial growth was 31.21 per cent, 112.64 per cent, and 232.81 per cent between 1966–1988, 1988–2000, and 2000–2017, respectively. Contrary, the population growth was 126.36 percent, 49.65 per cent, and 101.99 per cent between 1966–1988, 1988–2000, and 2000–2017, respectively. Overall, the population increase from 1966 to 2017 was 584.20 per cent whereas the built-up area increase in the same period was 828.60 per cent. This is the clear indication of urban sprawl from 1966 to 2017 because the percentage of built-up area growth was more than percentage of population growth.

Thirdly, the initial growth of the city was circular within a radius of 0–5 kilometer. From 1980 to 2000 the pattern of urban growth was contiguous within the radius of 15–20 kilometer, whereas during the last couple of decades, the growth pattern has turned into radial cum linear that is scattered at periphery attaining the form of multi-nuclei city. In other words, rapid but scattered growth has occurred along its major arteries i.e. Raiwind Road, Ferozpur Road, Grand Trunk Road, and Multan Road/Canal Road up to the radius of 20–35 kilometer. This is evident from the fact that 486 housing schemes (372 registered with LDA and 104 registered with CHS) have been developed as a result of traditional land use planning in Lahore. Out of which, several housing societies have emerged in the south-west direction of the city causing loss of agricultural land. Additionally, nine phases of DHA have been developed along eastern side of Lahore but main focus of growth remained in the southern part of the city due to its efficient linkages with Motorway and Multan Road connecting it with the rest of the country. The radius of the city has risen from one kilometer in 1850 to 38 kilometer in 2017, with transformation from the circular urban growth in 1850 to low density, ribbon, and leapfrog in 2017.

Fourthly, Lahore, like other cities in Pakistan, does not have a downtown or city center—the dense areas with mixed-use buildings (residential, office, commercial, and entertainment) within an almost walkable reach. Subsequently, it is falling victim to urban sprawl, at the expense of valuable agricultural land, where housing societies with single-family homes and large networks of roads are being preferred over other activities and services such as education, entertainment, offices, retail, and warehousing. This is the result of largely single-use zoning and ban on high rise

buildings for commercial purposes let alone the residential. High rise and multi-use zoning are not only discouraged but also penalized, most often. In addition, land use laws, building regulations, and zoning codes are unfriendly to commercial construction, public spaces, and commercial and community activities.

Fifthly, land use policy and taxation policy devised and implemented by bureaucracy have also been causing urban sprawl in Lahore. For example, until 2010, only two per cent of land allocated for new housing in Lahore was allowed to be used for shopping, entertainment, offices, flats, and hotels. Now we have a slight improvement, with five per cent of land allowed to be developed for these purposes. Whereas the land used for single-family dwelling units has slightly been reduced from 60 per cent to 54 per cent while the per cent of land used for roads remains the same i.e. 25 per cent. Moreover, it indicates that single-use zoning over mixed-use zoning is preferred. Furthermore, commercial use of land is often restricted along main roads and these (commercial) properties are heavily taxed. Contrary to this, tax is not imposed on the vacant housing plots. Therefore, plenty of plots are lying vacant in several societies.

Lastly, there is a large network of roads i.e. 14124 km. where 6.8 million vehicles (1.6 million private vehicles and 4.8 million motorcycles are currently present)—private vehicles (cars, two-wheelers, and three-wheelers) make for around 95 per cent of total vehicles in Lahore. These figures suggest that Lahore's existing public transport system is insufficient to meet the travel demand of the peripheral residents. Consequently, the demand for personal cars and private vehicles (mainly two-wheelers) despite price hikes, supply chain hiccups, economic recessions, and other issues, has been surging. Earlier, the total number of registered vehicles in the city was 0.5 million in 1998 and 1.2 million in 2005. A comparison of Lahore, Dhaka, and Delhi on population and registered motor vehicles in 2020, clearly indicates that Lahore has less population and more vehicles as compared to both Dhaka and Delhi.

After determining that the city of Lahore has been sprawling, we put an effort at exploring and analysing the role of bureaucracy in causing this sprawl. This was achieved by applying and testing five parameters or scales – absence of a single or central regulatory body, public policy for land use zoning and building bylaws, taxation policy for land development and real estate, and transportation and road network policy.

To begin with, Lahore is a prime example of those cities where city administration is fragmented. The city, in the absence of an integrated and consolidated regulatory body or coordination among the bodies or agencies, has a complexed institutional structure – comprising the LDA, MCL, and the LCB and the DHA – that governs and regulates urban development landscape. Apart from this, other institutions that are involved in housing development specifically are the CHS and the private sector. Thus, Lahore city is governed by a combination of various local, provincial, and federal agencies that undertake a variety of responsibilities, from urban growth management to infrastructure development, and maintenance to creation of new towns. These multiple agencies, instead of strengthening, weaken the land development control implementation owing to the overlapping responsibilities and administration areas. Moreover, the cumbersome approval process of building plans somewhat propels illegal construction—stay orders from lower courts and political influences add further pressure on unchecked growth in the city.

Secondly, in Lahore, there are five ways through which bureaucracy ensures or guarantees inefficient use of land, which, in turn, eats up a large chunk of land for minimum accommodation and causes sprawling. These five ways or methods are: 1) the “Garden City” approach; 2) land use zoning—single land use zoning is preferred over mixed land use zoning, and building bylaws—horizontal expansion over vertical development is preferred; 3) sprawled houses and offices for civil servants, judges, and army officials in the city center; 4) prime state land reserved for stadiums, training academies, and other luxuries; and 5) gifts of land for government officials in new developments. Bureaucracy has a key role in designing and implementing these zoning regulations and building regulations. They have turned Lahore a major vehicle for rent-seeking privilege preservation where zoning and the arbitrary use of public land have become major

vehicle for rent distribution. For example, the width of streets, height of homes, size of building lots, amount of space reserved for pedestrians, and even the reasons that one cannot operate a donut store in one's garage are all dictated by zoning regulations. Therefore, the past decades have seen a rapid increase in gated communities comprised exclusively of low-density, single-family dwellings. Three-to-five-story apartment buildings in such communities are rare. And where they are present, such mid-rise buildings are mainly provided for affordability concerns, rather than to improve density.

Thirdly, the current taxation policy for land development and real estate favours land developers and real estate tycoons. This, in turn, causes sprawl. For example, in most of the schemes in Lahore, more than half of the plots are inbuilt because bylaws are very flexible and owners of vacant plots have no fear of cancellation and they consider this investment a better safeguard against inflation. Moreover, speculators invest their money in the plots because no cost/taxes are involved in the keeping of vacant plots. Contrary to housing properties, commercialization is heavily taxed and complicated process. It is a much debated and politically motivated phenomenon in Lahore. Therefore, weak land use and building control and commercialization policies resulted in proliferated haphazard growth in all parts of the city.

Lastly, traffic management in Lahore focuses on building roads and corridors for cars. Bureaucracy has been making, supporting, and implementing policies about road networks, public transport, and private vehicles always conducive for urban sprawl. This is evident from the fact that the city has a large network of roads i.e. 14124 km. where 6.8 million vehicles (1.6 million private vehicles and 4.8 million motorcycles are currently present)—private vehicles (cars, two-wheelers, and three-wheelers) make for around 95 per cent of total vehicles in Lahore. These figures suggest that Lahore's existing public transport system is insufficient to meet the travel demand of the peripheral residents. Consequently, the demand for personal cars and private vehicles (mainly two-wheelers) despite price hikes, supply chain hiccups, economic recessions, and other issues, has been surging. Earlier, the total number of registered vehicles in the city was 0.5 million in 1998 and 1.2 million in 2005. Primarily, automobiles are permitting access to remote areas and providing the essential condition which allows sprawl to occur.

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