



## Morphological Development of Lucknow City

Nazmu Saqib, Vandana Priyadarshi, Suleman, Research Scholar,  
KMC Language University, Lucknow, Uttar Pradesh, INDIA

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### Corresponding Authors

Nazmu Saqib, Vandana Priyadarshi,  
Suleman, Research Scholar,  
KMC Language University,  
Lucknow, Uttar Pradesh, INDIA

shodhsamagam1@gmail.com

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Morphological Development of Lucknow City \*Nazmu Saqib, Research Scholar, KMC Language University \*\*Vandana Priyadarshi, Research Scholar, KMC Language University \*\*\*Suleman, Research Scholar, KMC Language University Abstract In the past two three decades the city has witnessed dynamic expansion which has affected the morphology of the city and this has impacted the morphological pattern of the city.

### ABSTRACT

*In the past two three decades the city has witnessed dynamic expansion which has affected the morphology of the city and this has impacted the morphological pattern of the city. The morphology is changing very fast and it was being proposed in Lucknow Master Plan 2021 to include 197 villages of the periphery in Lucknow city and this is altering slowly the city structure and the city may acquire roughly circular shape and have concentric morphological pattern, which is an idealistic form of city. Current study is based on secondary data and data are collected from census of india and Lucknow municipal corporation. Further the maps are used for representing the change in Lucknow city in various phases.*

### KEY WORDS

**Morphology, Master Plan, Structure, Pattern, Lucknow, Expansion.**

### INTRODUCTION

As we know the urban morphology is related to the physical layout and internal functional structure (functional morphology) of urban areas and populations. The physical layout means the urban structure and can be called the city's internal geography. Functional morphology can be exchanged with urban land use. Various theories have been developed by urban geographers to analyze the morphology of the city center. Concentric model theory of E.W.burgess (1923), the Homer Hoyet sector model (1939) and multi-nuclei Harris and Ullman (1945) models, these models have helped us identify various functional zones within the boundaries of the city. It can include CBD, residential areas, cultural areas, parks and open areas, etc.

According to Brush, Indian cities based on their morphological characteristics can be classified under two broad categories - 1. Customs: Characteristics such as Indian City, 2. European types: These include Cantonese, civil lines, train colonies, etc. Generally the morphology of this city is initially concentric in nature and is influenced by the physical characteristics of the site. Unlike other British colonies, especially in Africa, cities and cities are indeed in India before the emergence of Europeans. Morphological capital of the city and Indian cities are different from above. The original core of urban settlements is temples, fortresses, palaces, permanent water sources or important places. Chowk, which doesn't really fit the Western CBD concept or down the city, has become an important part of these centers.

With population growth, demand for additional space for accommodation is necessary. Therefore, new housing colonies grow and around the old city. These colonies are better planned and wide.

## Study Area

Lucknow is the capital city of Uttar Pradesh and the city of national interests due to historical and political significance. This is also the center of education and research activities with many main institutions. It became one of the most prosperous and culturally rich cities in India.

**Location:** Lucknow is located on the edge of the Gomti River between 26°30 'to 27 ° 10' North latitude and 80 ° 30 'to 81 ° 13' east longitude.

**Climate:** Lucknow has an extreme tropical climate. Summer can be hot enough with temperatures up to 40-45° C, while winter is cold, with dipping temperatures to 3-4° C. The average annual rainfall is 1010 mm, mostly accepted during the rainy season.

## Objective

The objective of this study is to analyse the gradual changes in the morphology of Lucknow City.

## Methodology

- ◆ This is an empirical study.
- ◆ This research is based on secondary data.
- ◆ Data was collected from Lucknow development authorities, Lucknow Municipal Corporation, Indian surveys and remote sensing application centers.
- ◆ Picture representation: The images provided in the research work present the actual conditions of the area. They explained concepts that deal in this research work.
- ◆ Data analysis: logical, rational and scientific analysis has been carried out for the problems collected. The analysis carried out was well done to come to the conclusion of the study conducted in the Lucknow City area. Graphs and diagrams have been used when needed.

## Demographic Characteristic of Lucknow City Population Growth Rate and Spatial Distribution

In accordance with the provisional census data for 2011, the total population of Lucknow City was 28.17lakh. There was a growth of almost six times in the city's population in the past six decades, from 5lakh in 1951 to 281ak in 2011.

The average decadal growth rate of the city of Lucknow from 1951 to 2011 was 36.14%. The graph of demographic growth trends showed more than 70% growth between 1981 and 1991, a rapid growth rate over the decade was caused by changes in the city boundary. Before 1987, the area below the city limit was 118 square kilometers expanded to 350 square kilometers; Therefore, the closest settlement and villages are also part of the city limits which results in high population growth over this

decade. The population growth trend in the past two decades is to go to the decline side. The reason for decreasing growth rates can be stabilized at the birth rate and heavy migration from Lucknow City against Metro cities such as Delhi and Mumbai.

### Factors responsible for Morphological Change

The morphology of a city is influenced by certain factors, from time to time. Among them, mention can be made of the following factors:

#### Job Opportunities

Being the district headquarters and capital of Uttar Pradesh, Lucknow’s main economic region is administrative and commercial activities. There has been continuous growth in the Administration Unit (Government and Private), commercial companies, service centers etc. and this leads to increased employment opportunities. This employment opportunity leads to the immigration of people from rural and urban areas and thus population growth. This functions as a factor for changes in city morphology. In Table 1 we can see the population changes that work and do not work for years.

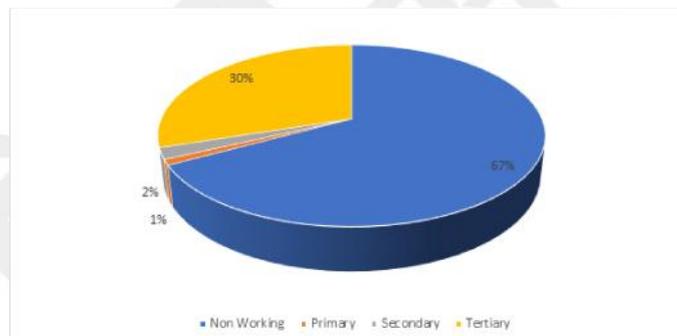
The work participation ratio has been reported significantly high in Lucknow because more than one fourth population works (27.51 percent). It only includes major workers while marginal workers also bear large quantities. The work population is likely to increase in the coming decade because more and more employment opportunities in the coming years

**Table 1:** Composition of Growth of Population 1991-2001

Composition	Population Increase	Growth (%)
<b>Natural Increase</b>	368998	064%
<b>In migration</b>	207307	036%
<b>Total</b>	575305	100%

(Source: census of India)

**Graph 1:** Occupational Classification Of Lucknow City-2011



(Source: Master Plan 2021)

### Migration Pattern

The main reason for migration is related to economic factors such as work and business, various other social reasons such as the movement of family members from rural areas to urban areas due to marriage and other social associations. The higher the level of migration of educated, skilled and semi-skilled workers from rural areas to urban areas has been observed in Lucknow City. In accordance with the data available from “Study of the Counter Magnet area to Delhi & NCR by the National Capital City Planning Board”, total in-migrant in Lucknow City over the 1991-2001 decade has 2,36,788 in the number and migration out is 75,486. Table 2 shows in-out migration patterns from several big

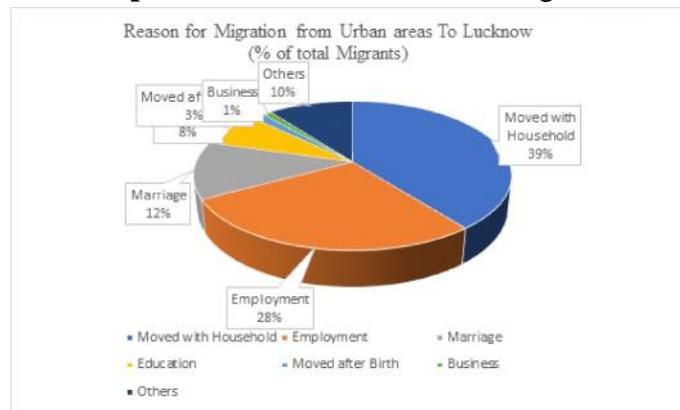
cities Uttar Pradesh. As shown in the table, Lucknow City attracted the maximum number of migrants followed by Kanpur and Meerut City.

**Table 2:** Migration Pattern in Key Towns of Uttar Pradesh

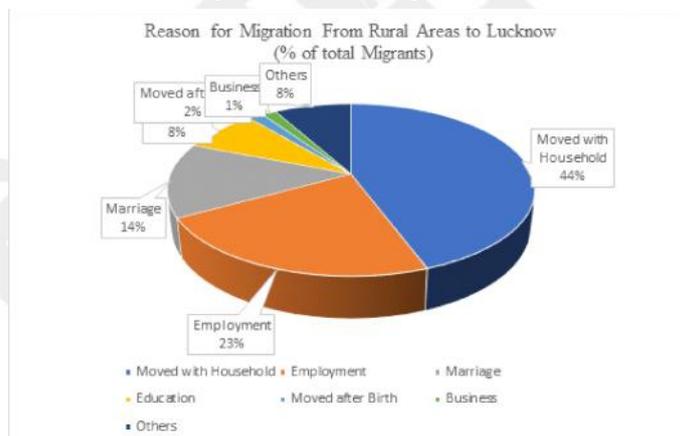
Cities	In Migration	Out Migration
<b>Lucknow</b>	236788	75486
<b>Meerut</b>	115870	137589
<b>Agra</b>	84025	107301
<b>Kanpur</b>	178397	45052
<b>Allahabad</b>	76191	89092
<b>Bareilly</b>	86352	100634
<b>Varanasi</b>	68324	85724

(Source: Revised City Development Plan for Lucknow, 2015)

**Graph 2:** Reason for Increase In migration



(Source: Census of India 2001, migration Table d-3 series)



(Source: Census of India 2001, migration Table d-3 series)

### Land use Change

Changes in land use are associated with city development which results in an increase in land use demand for various purposes and changes in the morphology of Lucknow City. The land obtained mainly for agriculture 87.37 Km square is 62.68 percent, plantations to build a 2-km square area that 1.43 percent, wet soil to build a 2.1 km square area of 1.51 percent, land to build Area 1, 75 KC square 1.26 percent. Rural to accumulate an area of 3.93 km square 2.82 percent, forest to build an area of 0.94 km that 0.67 percent, water to build an area of 1.17 km square 0.84 percent, and the land under transformation 40, 12 Km Square 30.12 percent. From table 4. A given below it has been noted that

agricultural land is 87.37 km / km, 2 square kilometers and a wooden area of 0.94 square kilometers to change the stacking area which is a very ecological land, it has been really not trusted Therefore Urban Sprawl and now land transformation is a continuous phenomenon, changes as shown in Table 3. This transformation can affect morphology in the future too.

**Table 3: Land Transformation**

Change in Categories	Area (sq.km)	Percentage
<b>Agriculture to Build up Area</b>	87.37	62.68
<b>Plantation to Build up Area</b>	2.00	1.43
<b>Wet land to Build up area</b>	2.10	1.51
<b>Waste land to Build up area</b>	1.75	1.26
<b>Rural to Urban build up area</b>	3.93	2.82
<b>Forest to build up area</b>	0.94	0.67
<b>Water bodies to build up area</b>	1.17	0.84
<b>Land under Transformation</b>	40.12	28.78
<b>Total</b>	139.38	100.00

(Source: Computed)

**Table 4: Land Use / Land cover Change In Lucknow City**

Landuse	Area Sq km. (1972-1973)	Area Sq km. (2004)	Area increased
Commercial	0.555	3.6	3.045
Residential	18.38	89.45	71.07
Recreational	0.656	4.35	3.694
Facilities/Utilities	1.38	14.1	12.72
Administrative	0.4535	5.6	5.1465
Industrial	1.39	9.9	8.51
Open land	41.108	20.2	-20.980
Water bodies	4.68	3.1	-1.58
Forest	7.52	4.1	-3.42
Agricultural	2.56	0	-2.56
Others	1.325	12.4	11.075

(Source : Guide map of Lucknow City 1971-1972)

Town and Planning Centre U.P, Lucknow, 2004

## **Temporal Change in Morphology of Lucknow City Morphological Pattern in Past**

Lucknow urban character, known in the early days as a garden city, can be understood as a consequence of the social, political and cultural processes that affect the city's structure since Mahmood Ghaznivi's invasion at 1031 AD was abandoned. In the city by Rajput; Sheikhs, Pathans, and Mughal in the sixteenth century and then the rulers of Oudh and finally, England in the 19th century. From the point of view of urban characters, two significant and unique changes occur as a result of this historical process. First, when the power of different rulers controlled the city in a different period, each leaving the impression in various parts of the city through different urban materials. Even though Nawabs built Bagh, Ganjes, and Imlama in the west and south of the city, England each found Cantonment and the train station to the east and south. Second, as a consequence of this different power, the layering process has occurred where the new power coats the other fabric above the previous one.

### **Different Phases of Growth of Urban Landscape**

Through the past no account can be given from Lucknow's Origin. The tradition is widely said about the origin of the city. When legend runs, it is believed that 'Lakshman', Lord Rama's brother laid the foundation of this city in 'Tretayug'. Since that day it has been known as 'Lakshmanpur'. This theory is supported by the presence of a mound called 'Lakshman Tila', which is located in the western part of the city.

A small city prosperous and growing in the fort and this is a city that we now know as Lucknow City. After that Lucknow continued to advance and achieved glory and major prosperity, especially under Akbar, during the time which was part of Sarkar Avadh Suba. The next big ruler of Lucknow is Nawabs from Avadh. From this period, city growth can be divided into the following three phases:

- (a) Nawabi Lucknow (Pre 1857)
- (b) British Lucknow (Post 1857 to 1947)
- (c) Lucknow after independence (1947 onwards)

#### **(a) Phase I: Nawabi Lucknow**

Pre-rebellious urban characters from Lucknow can be widely shared for analytical purposes into two different eras responding to two major events. The period before 1775 (the year when the population of East India was appointed and Nawabs said the independence of Mughal) was in terms of urban structures, the temporary phase.

Only after 1775, that Nawabs, who accumulate resources from rich inland farms, pamper themselves in their desires to build and enjoy looking. In this period, Lucknow, as a city, began to be officially structured through the introduction of key elements such as Bagh (both as part of the palace complex or independently), Ganjs and Imambara Complex (Rajat Kant.op.Cit, p.67). Moses Bagh and Asaafi Imambara during the Nawab Regime Asaf-UD-Daula, Vylayati Bagh and Shahnajaf Imambara during the Ghazi-Ud-din Haidar government, Pasand Bagh during Nasir-Ud-din Haidar, Husainabad Imambara during Muhammad Ali Shah, Qaisarbagh, Sikandarbagh and Sibtainabad Imambara as long as Wajid Ali Shah is some of the remnants, have escaped from total destruction regardless of large-scale deprivation and destruction during the rebellion. The city development process was also facilitated by the fact that after the appointment of the population of East India companies, people came to the region.

Many Ganjes were also developed. Every ganj, as an urban arrangement element is basically a linear commercial spine with a residential residential structure both at the top level or behind the commercial spine.

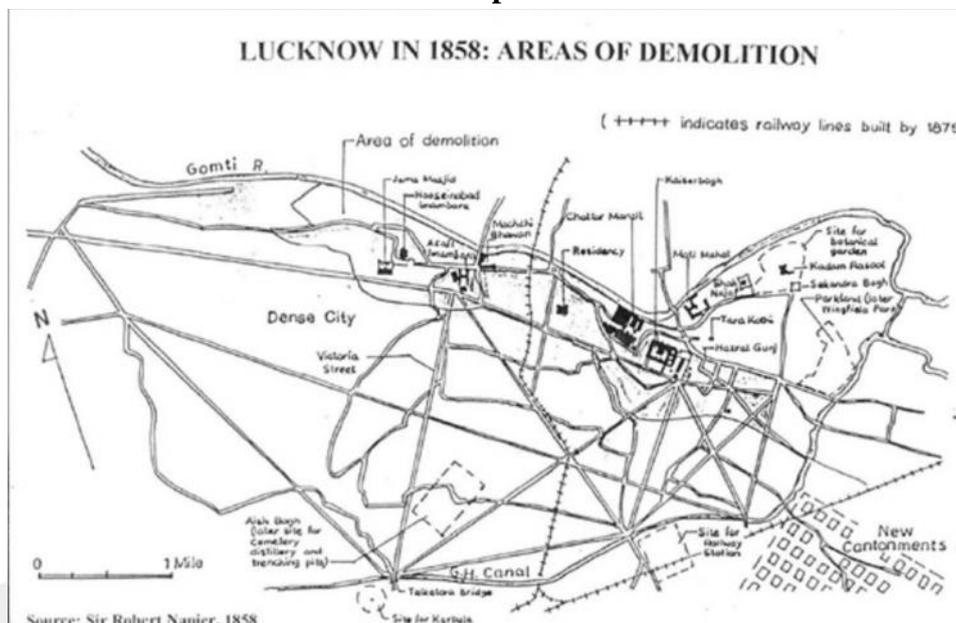
Imambara complex as urban ingredients is the mourning theater for the dominant Syia City. They provide a background for Moharram (an important part of the Shia calendar) and also created without the small size of the first significant public open space to the city.

But Lucknow before 1856 was not only built from Nawabi fantasy. East Indian company officials, only a handful of 1775, has been, many years later, developed enough to create a garden edge on the residency hill. Here they live in a substantial bungalow, surrounded by parks and streets of Pukka, with a small Gothic Church, Post Office, Banquet Hall and Tennis Court (Rosie Llewellyn-Jones).

### (b) Phase II: British Lucknow

The mutiny of 1857 saw the pleasure gardens into a grave for the dead. Residency is a warning. Extensive land corridors are cleaned along the banks of the Gomti river (shown on the map 3.1) to rebuild the city based on strategic needs. Lucknow's thick organic pattern is coated with a pattern in which three main roads emerged from the Machchi Bhawan complex cutting the maze of the environment so that the forces can move easily. Imambara and Qaiserbagh are cut.

**Map 1**



(Source: Robert Napier, 1858)

The yard and hallway that stands between Qaiserbagh and The Chattar Manzil disappeared. This method broke the palace complex by repending the roads have also been used in Chattar Manzil and then at Sikander Bagh, a two-storey-style building of two handsome Greek-style in large walled gardens.

The city began to grow east with the main colonial input such as Cantonment and the train station. A railroad track issued by the city in 1862. The train station is located in a spacious open park called Charbagh, which is adjacent to Cantonese. The site is considered "commercially central and good, with Cantonese behind it". Pantonment was moved from Maria in the north of the river to a vast dilkusha park in the east of the city. The residential area for non-military communities calls civil lines created in the eastern part of the city. Hazratganj is a fashionable, European-style shopping office. Other features such as clock towers, statues, theaters and club services inside and around Hazratgaj began to increase. This area along with Cantonment, train stations, civil lines and fashionable shopping arcade, Hazratganj is The New Lucknow.

A set of other landmarks, basically the public in nature is also added to the city scape, with the transfer of the capital from Allahabad to Lucknow. In 1921, the Legislative Council of Uttar Pradesh

chose to build a new council house in Lucknow than in the provincial capital, Allahabad. This made Lucknow the provincial capital, although it was needed until 1935 for the secretariat to be moved fully to Lucknow and only in 1947 that Lucknow was officially recognized as the capital.

The decision to make Lucknow, the capital carrying a period of economic development to the city, which has been stagnant, of course since 1877 (when Awadh Province has been combined with the northwestern provinces to form "North West Province and Oudh".) And maybe from the ancience of the annexation in the year 1856. This economic development - such as the new political interests of the city - means a large increase for several population sectors and an improved role for the city government.

### **(c) Phase III: Lucknow after Independence (1947 onwards)**

British departure was accompanied by the country's partition and large-scale migration of people from Pakistan. Refugees from Pakistan, Punjabi, Sindhi and Sikh took their place, departing. Even though refugees took over the homes and businesses left by Muslims, they did not fully create the social and economic life of Lucknow's pre-independence. This is the end of an era. A new way of life, more dynamic in nature takes over, and step-by-step symbols are valued for a long time and eroded values.

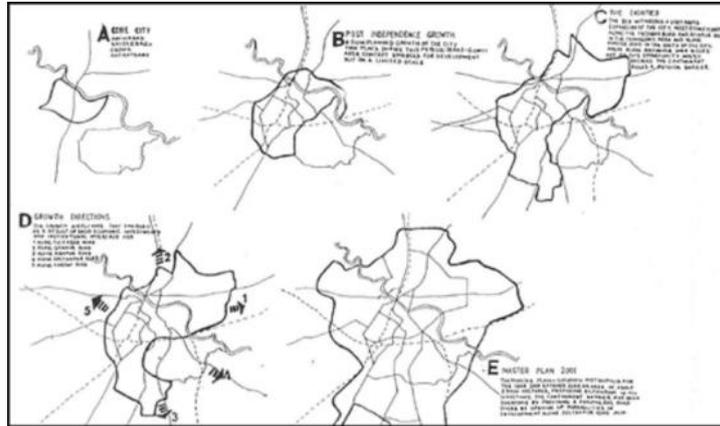
Immediately after independence, resettlement of refugees from Pakistan became an urgent task. A number of Muslim stores and houses, who have left Pakistan are given to refugees under the Evacuee this property supply. The new construction began after the share of the Evacuee property was used up. Large people settled in the new residential area was developed along the Kanpur road in the southern part of the city. Occupying every little space available, they greatly enhance the density of the city's population. Density increased from 5703 people per sq. Km. in 1931-8053 people per sq. Km. In 1941 and 10,100 people per sq. Km. In 1951. In the face of this phenomenon the attraction of the previous British Lucknow district for the upper class family greatly increased. A massive exercise in housing construction began in the city. The city began to expand horizontally. New developments disrupted city infrastructure. The center is fully served by the city provided several clear sites for economic activities. On this site, there is a quick appearance and intense concentration of offices and business houses. New colonies in the Trans-Gomti region began to develop. Nishatganj, Badshahnagar and Mahanagar gradually began to come in 1960 (Figure 3.1).

Because of rapid growth pressure on limited resources, Lucknow increased trust in consultation with the city & rural planning department prepared a master plan for Lucknow for a period of thirty years (1965-1995) in 1959. Increased population with 31.96 percent in one Decade (1951-1961) Planning intervention is needed to eradicate unplanned development crimes, which has started when the capital shifts to Lucknow from Allahabad.

The development of new colonies in this initial stage growth is defined in future growth in the future. Thus the pioneering work of Lucknow Development Authority is a housing colony in Aliganj, north of Niralanagar along Sitapur Road. Faizabad Road is another axis of development well by Lucknow Development Authority and up. Development Board Housing. Indiranagar and Gomtinagar came along this road in the 1980s. In the south of the city of development along the Kanpur Road is relatively slow. Jai Prakashnagar, Adarshnagar, Sarojininagar was developed in the southern part of the city. The LDA land construction scheme is defined by the city development line. To serve newly developed areas, water storage tanks, electricity networks and telephone exchanges are built, which means that the area then surrounding can also be served. So this scheme becomes a magnetic pole withdrawing development. LDA was overtaken to virgin land on the outskirts and private builders such as Ansals, Eldeco and others carried out the fullness.

But, regardless of the planned scheme, a massive addition to city housing often occurs through the construction of private and unplanned houses. People have individually built houses, carving streets, persuaded and bribed officials to extend their electricity, water and other community services. Cluster wild residents have become much after independence. Slum (called Local Basti Malin) Repair is carried out by Lucknow Municipal Corporation, which identifies their needs and according to preparing plans for environmental development. From the discussion above, become clear with the given figure.

**Figure 1:** Phases in Expansion of Lucknow City.



(Source: M.N. Nigam, *Evolution of Lucknow City*, 1960)

### Physical Expansion of Lucknow City (1970- till present)

From Lakhanpur's small village, Lucknow has developed into a metropolitan city with 28 lakh populations spread in an area of 350 square kilometers, with this increase, Lucknow City morphology is also affected. In 1951, the total area under Lucknow City was only 48 square kilometers and in a period of 40 years has increased nine folds. Lucknow City's expansion for many years has been shown in Table 3.1.

Gomti River Live Lead Lucknow City divided the city into two parts of Trans Gomti and CIS Gomti and the city had grown along the spinning side with NH and SH networks out, forming the city in all directions. The Lucknow Business Center (CBD) district is located in the heart of the city and the city urban framework has produced a city that grows in all directions that continue to change the structure of the city. The driving force for city growth is the capital, administrative hub, educational hub and trade and trade activities that have become a sustainable attraction for rural communities and closest urban areas. The CBD of Lucknow is a high density zone with major land use in housing and commercial activities. The old city was crowded with a narrow road and lack of open space. The majority of middle and high income groups are inhabited in the newly developed peripheral region. Because the population that develops, demand for new housing areas also increases results in developing new colonies such as Gomti Nagar, Rajajipuram and Indira Nagar etc. Also in the previous decade Lucknow had seen real estate boom in terms of various cities that were integrated outside city skirts. Urban Sprawl has occurred in all directions but is more significant in east and north. Significant changes in land use are proven in the southern part of the city too. This change is in morphology as shown in Table 5, Image 1 and every different year map.

Year	Population	Area in sq.km
1971	774644	101
1981	947990	118
1991	1619116	310
2001	2185927	310
2011	2817105	350

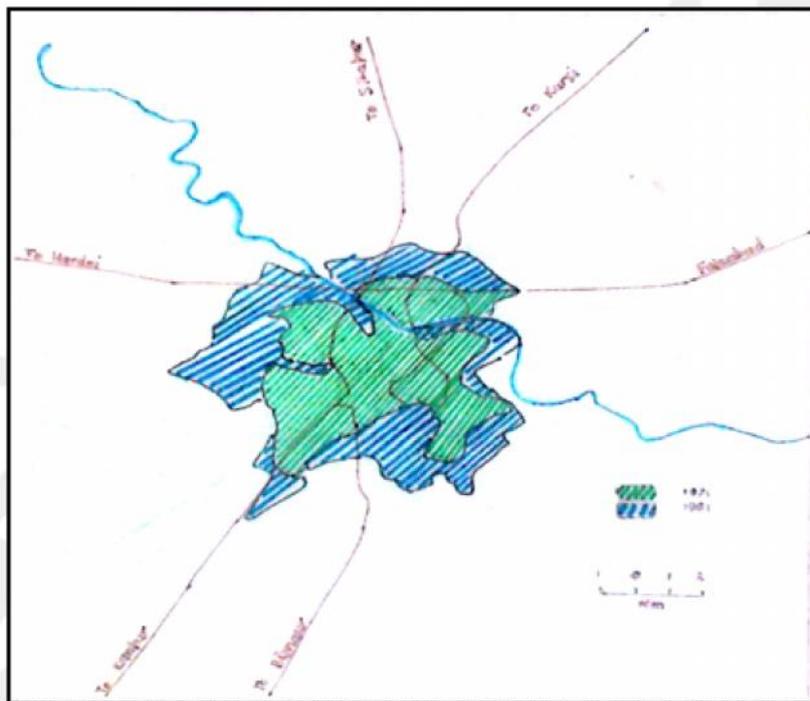
(Source: *Census of India*)

**Map 2: Lucknow Morphology in 1970**



(Source: Lucknow Master Plan-2021)

**Map 3: Lucknow Morphology in 1980**



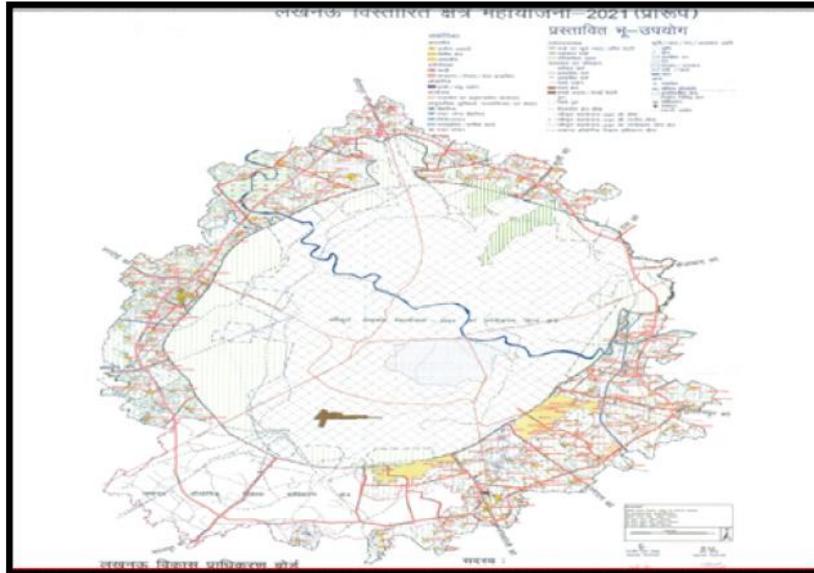
(Source: Lucknow Master Plan-2021)



## Master Plan 2021 Extension

Town and Country Planning Department, Uttar Pradesh has added 197 villages within the limit of a Masters Plan with an area of 53,041 Hac not including forest areas through ACT 6, Notification Number 174 dated January 27, 2009. The 37 village falls Lucknow Industrial Development Authority (LIda) with a total area of 14.126 Hac. After combining additional areas, the total advanced area and can be developed in Lucknow comes around 980 square kilometers. Various new proposals have been provided for newly expanded areas such as outer ring roads to avoid pressure on existing road networks, provision of green belts, livestock colonies, disposal places, housing ware, truck terminals etc. Map 6 shows the master plan expanded limit for 2021.

**Map 6: Master Plan 2021 Extension**



(Source: Lucknow Master Plan- 2021)

## CONCLUSION

City is dynamic and it is the tendency of city to expand and grow with its increasing population growth, same is the case with Lucknow city and this can be best described by its changing morphology. Lucknow city has gone through various phases of expansion with its changing characteristics and morphology. From a very small town of Lakshmanpur near bank of Gomti, the city expand and emerged as a metropolitan city and the capital of Uttar Pradesh state. It is the changing morphology and its dynamic structure that tells that the city is growing and it act as an organism as mentioned in Friedrich Ratzel's "Organic State Theory".

After the analyses of the different phases of morphology, I can say that during the long period of evolution the city has acquired irregular street pattern, complex aspect and function and lack clearcut functional zone boundary. The central zone act as business core and this section is primarily surrounded by the residential zones with small market and retail shops. This reveals that the inner zone covering area- Chowk and Aminabad is the heart of the city and the inner zone is the historic core as well as core of modern city. In this zone the road pattern give a view of 'grid' or 'web' and no area is vacant. Hence, further expansion of business area not possible in the inner zone of the city . While, the middle zone around the old city have few vacant space. The middle zone is not fully built-up and highly commercialized area. This zone is moderately high residential area and administrative area which is planned urban growth. Then comes the outer zone of the Lucknow City which is newly developed with large amount of vacant area. This zone is planned with transport network, dwellings and urban

amenities. It is developed along the outgoing main roads in different directions towards the surrounding cities giving the pattern of axial growth.

The morphology is changing very fast and it was being proposed in Lucknow Master Plan 2021 to include 197 villages of the periphery in Lucknow city and this is altering slowly the city structure and the city may acquire roughly circular shape and have concentric morphological pattern, which is an idealistic form of city. With future development program in various sectors, the city morphology may again going to modify because the population may increase with demand of more space for various sectors and there is a need to plan growth potential areas as discussed in earlier chapter. Then in future the city may acquire oval shape, apex that may be roughly triangular pointed towards Hardoi and base at Kanpur of an arc shape.

At present the major issues that city is facing are mainly land use deviation from master plan that is there has been lot of variations in the proposed land use and actual development taking place in the city and haphazard development, new development taking place in the periphery of the town is in very haphazard pattern with many unauthorized constructions are coming up. These type of development lack in the infrastructure and services availability and will be termed as unauthorized colonies and the decreasing green cover, as per land use figures shown in the landuse change section that there has been reduction in green cover in the city from 4% to 3% between the years 1987 and 2005. There are both positive and negative impact upon the city landscape because of this changing pattern. It always change, as they are the expression of the constant interaction between natural and cultural forces in the environment.

Integrated development needs holistic approach for balancing the increasing population pressure and changing morphology for the sustainable development of this dynamic city.

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