Book Review

Morphological and Demographic Characteristics of a Planned City: A Case Study of Jaipur City

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Abstract

This study explores the historical origins of the spatial, administrative, and social growth that shape the Jaipur City. The princely city of Jaipur has the pride of being one of the few planned cities in the world. Jaipur popularly known as the pink city of India and is the capital of the State of Rajasthan. The foundation of Jaipur was laid by the then ruler of Jaipur State. Maharaja Sawai Jai Singh II on November 18, 1927. It was designed by Vidyadhar Bhattacharya a Vastukala specialist architect and engineer of Bengal in rectangular blocks on an area of 6 km2 which increased to 65km² in 1941 and 300km² in 1991, and 467.57 km² in 2011. If the master plan (1991-2011) of the Jaipur region is to be reached upon, the area of the city would be increased to 1464 km² comprising 385 villages. The Plan proposes 32 urban nodes out of which 20 nodes fall in urbanize area and the remaining 12 nodes in other parts of the regions as satellite towns. Jaipur City has experienced 32.2 per decadal growth rate of population during 2001-11.

Keywords: Origin, Evolution, Urban Growth, Development, Planning, Walled City.

Introduction

The existing territory of the Jaipur City was known as 'Matsya Desh' in the past. It was a kingdom of king Virat in Mahabharata. This king belongs to the Kacchawa Rajput clan a descent of prince Kusha, son of Rama. The new capital city was established by Maharaja Sawai Jai Singh in 1727 A. D. and named as 'Sawai Jaipur'. The process of transforming economic dimensionshas resulted in an outcome of the new capital city. Dausa and Amber both are remain based on agricultural land. The major occupations of Jaipur City were micro-financial banking and trade ofjewellery, food-grains, cotton, and marble stone for building material (Bhojnasar's Doha, pp. 199).

Morphology principally understands the physical form, pattern structure of towns or cities. Lynch (1960, pp. 49) has classified landscape imagery into five categories likewise as *Path-* the network of movement, *Edge-* elements binding the space, *Node-* the focal point, *District-*part of exhibiting a degree of homogeneity, *Landmark-* the points making a sense of reference. Similar to another city of the world, these features are also clearly shown over the Jaipur map. Urban morphology studies the general characteristics of this city development architectural scheme and pattern of the street, road, housing pattern, market location and other micro fabric within the town (Grewal, 1991). Urban morphology was recognizedby the combined relationship between the pattern of the city and social relationships (Mumford, 1938, pp. 101).

Geographical Setting

The Jaipur is situated from 260 km south-west of New Delhi on a sandy triangular dried plain of the lake. Climatically, the city comes under a semi-arid region of Rajasthan. It is characterized by hot summer, low rainfall, and low relative humidity. The mean temperature at Jaipur is 36° C varying from 18° C in January to 46° C in June. The normal rainfall is 600 mm, nearly 90 percent of which occurs during June-September. It extends from 26° 47' 0.21" to 27° 1' 36.84" N latitude and 75° 41' 15.19" to 75° 54' 36.27" E longitude.

The whole geographical area under the city is surrounded by the hills of northern Aravalli range having peaks and water bodies. The city is occupied by Nahargarh fort, Jaigarh fort, Ganeshgarh, and Shankargarh, and further by Raghunathgarh and Ambagarh in the north and south of Galtaji. Through these fortifications, a defence boundary around the city was created (Jain, 2005).

Nahargarh seems to be built to control and monitor the city, there is scraped in the front of the city while gentle slope towards Amber side (The Imperial Gazetteer of India, p.400). The major peaks elevation is 648m at Jaigarh, 599m at Nahargarh, 786m at Barwara, 747m at Manoharpura, 775m at Bilali and 656m at Bichun (Rajasthan District Gazetteer-

Jaipur). Rainwater harvesting is the main source of drinking water from various sources likewise Talkatora Lake, tanks and ponds and the lodge which was being used by Kachhwahas for hunting purposes (Sarkar, 1984 p. 206).

Research Objectives

- To examine the spatial expansion of Jaipur city.
- To study the morphological and demographic changes in the city.

Research Questions

In this paper, we stated that cities have changed and are changing. I have chosen interrelated sets of questions.

How does a city vary across time and space? How has the evolution of the city reflected prevailing historical conditions?

How has the form of the city been shaped? How are activities like land uses distributed within the city?

Database and Research Methodology

To recapitulate in the light of the objectives of the study the main theme is to examine the origin, growth, evolution, and development of their morphological and demographical changes. The data related to origin, growth, evolution, and development have collected from the Imperial Gazetteer of India, Historical Documents, existing literature, and other sources. Demographic data have collected from A-2 table and A-4 table of the census of India on decadal population growth and town agglomeration since 1901.

The rationale behind the Urban Growth

Sawai Jai Singh was a great town planner. The City had to be different to mark the stamps of the brilliance. Maharaja was fond of mathematics and science and he asked a well-known architecture Vidyadhar Bhattacharya in designing the layout plan of Jaipur City. Jai Singhgone through the earliest Indian literature on astronomy, town planning, and etc. while residing at Amber, Jai Singh II had already developed 'Jai Niwas Bagh in 1868' and Baradari Suryamahal near Talkatora lake. The central block i.e. that is Palatial Complex occupied by Royal Palace, Govinda-Deva Temple. A sketch of the shows roads in the 'Gridiron Shape' running from north-south and east-west with two Chaupads, and Darbhavati stream (Stanistawsti, 1946).

Physical terrainplayed an important role in the process of development of the city. Aravali hills in the north and east limited the growth with very limited space for the expansion of the city. The existing urban space of the city was incompetent to fulfil the demand of the increasing population growth. Therefore, Sawai Jai Singh decided to transfer the capital from Amber to Jaipur in 1727, which is located in the plain, 11 kilometres south of Amber.

The faunal shape of the Nahargarh hills in the north had demarcated the direction for the development of the new city in the south of Amber only. This fertile plain was founded all the north-west and east by Hills that provided a defence to the city from three sides. The city was planned by the Rajput kings of Rajasthan state.

Apart from state security, geographical regions have played a vital role in the transforming of capital from Amber to Jaipur city. They are as: i) the population growth of Amber was rapid where is Nahargarh hills in the north, east, and west had restricted the further expansion potential, ii) the perennial stream and well-developed drainage system was provide adequate water supply to the city, iii)Aravali hills were shielding Jaipur city from foreign invaders,iv) the proximity to residuals of the Aravali ensured the availability of building material like sandstone and marble.

Political objectives have also created a situation for the expansion of urban space. The fruitful political governance of Kachchwaha Rajput and their relationship with the Delhi sultanate had provided an ideal political and social atmosphere. The city was contemplated as a symbol of power by the states in the 17th century. Sawai Jai Singh-II had established a new capital city to be proclaimed the political supremacy in the area and uniformity with the Mughal cities like Delhi (Sharma, 1969 & Sarkar, 1984).

New planned City was initially located in the dried bed plain. Meanwhile, the city was located in the semi-arid region; accessibility of water was a significant priority for the city planners. Two dams were constructed named as Sagar and Mansagardam build on the Darbhavati River to settle the water issue. Later on, the Jhotwada River was also withdrawn through the Amani Shah Nallah. The *Aman-i-shah* nalla rises in the hills just to the north of Jaipur city, and flows southwards of the old town of Sanganer and, after a course of about 35.40km, it falls into the Dhund River (Rajputana Gazetteer, 1879).

After independence, the Rajasthan union was made with the unification of the states of Jodhpur, Jaisalmer, and Bikaner with Jaipur. Man Singh-II was designated as 'Rajapramukh' which was withdrawn in 1956. Subsequently, the Jaipur state was accredited as the capital of Rajasthan. Being thelargest and planned capital city of Rajasthan, Jaipur has rehabilitatedasa hub of education, culture, socio-economic and vulnerable political ecology life of the Rajasthan state.

Planning Strategies

According to *Siyah-Hazur* of V. S. *1794/1737* A.D. that Jaipur city was planned as a rectangle shape divided into 9 blocksdemonstrating the 9 treasure of mythological Kuber. Although, there is no room for the ninth Nidhi in the square owing to the imposition of the

hill for conventional reasons it was placed outside the square towards the east in continuation of blocks. All major roads were running at the right angle to each other. There are three of them running into north-south direction and intersecting the 3.5 km long east-west axis.

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Rajmana-Potedar of Jaipur of V. S. 1783/1726 AD stated that wards were divided by socio-economic status as Brahmanpuri, Kumaravas, Maheshwarivas, Chinpavas, Telivas, etc. caste-based space organization in the city (Heber, 1828, pp. 414). The three intersections thus formed Manak Chowk and Ramganj Chaupad. A concrete wall of 20 feet heightand 9 feet width has surrounded the city, which could be entered through seven gateways. They are as Dhruvapol on the north, Gangapol, and Surajpol on the east, Rampol Gate, Sanganery Gate and Ajmeri Gate to the south and Chandpol on the west (*Siyah-Hazur*).

Urban Morphology of Walled City

The city topography was arranged out on grid pattern, drainage system, brakes like blocks of houses and the building for shops and crafts. The social arrangement inherited in the earth 'Shastra' that Rahman will live in the north, Kshyatriyas is in the east, Vaisya in the south and Sudras class society in the west may be considered to have a concrete manifestation in the city of Jaipur (Roy, 2006, pp.79-80). The city was divided by the Hindu caste system into nine wards with keeping 'Jainiwas' as its center. Absolutely, specified the duty to locate the palace centrally, the position of the Brahmas Thana (Sharma, 1979).

In the 18th century, Bazars, Havelis, Temples, and other ritual monuments were built. The widths of the path were predetermined and intersections of the main axial streets designed and called Chaupars namely Badi Chaupars and Chhoti Chaupar. Historically, the Chopras were an outcome of 10th social activities used with water structures connected by several sources of drinking water at street level (Sharma, 1979).

Originally, only four Bazars were built and recognized as Johri Bazar, Sireh Deori Bazar, Kisan Pol Bazar, and Gangori Bazar. The local governance body issues a noticed for the construction of building storey on the main street in the front of Jaipur city as one story and at any height, any shape, or with all buildings (Sharkar, 1984).

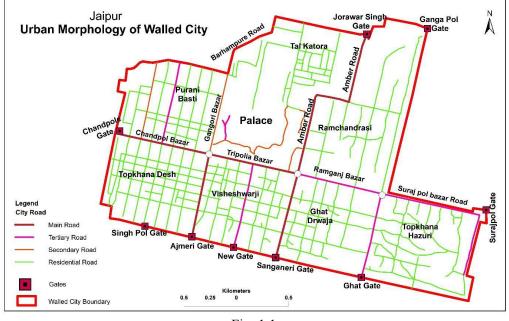


Fig. 1.1

History of Urban Growth

The expansion of urban space is matching and exclusive in nature varying from one city to another city. The concept of space and changeof the city is dynamic in the landscape, which changes through phase and observation. The urban space development has been done through various sources like history existence, geographical situation, locational benefits, administrative and political setup in developmental strategies. Jaipur city pledgees outward special growth, earlier within the walled city and later on outskirt from the Walled City and their special growth pattern of Jaipur city is divided into major three distinct phases:

Phases of Development

I. Phase-I from 1727 A. D. to 1800 A. D.

The Jantar Mantar observatory was established by Sawai Jai Singh II wasfinalized is 1734 the structure continued on till 1738 with over 23 astronomers and a large number of masons and engraversemployed at daily wages (Sharma, 1977, p. 28).

The Modikhana Chowkies and Visheshwar ji were engaged by rich Jain and Hindu merchants and businessmen. The Johari Bazar side of Chowkri Ghat Darwaza originated by merchants, artisans, and workers. Chowki Ramchandra ji enclosed temples and Havelis made by then the king, his queens and leading nobles on its Sireh Deorhi Bazar side, while the royal staff and craftsmen resided to the east and north-east part of the city. Topkhana

Hazuri, which was irregular and sandy, came to be used for the factory workers. But the *Siya-Hazur* of V. S. 1794/1737A. D. mentions 'Gangpol' gate existed in the northern wall of the city.

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Brahmapuri colony was developed for Brahmins of Prayag in the north of Purani Basti, who were invited by Jai Singh for Ashwamedha Yagya in 1734. Therefore, Brahmapuri resided by the royal priest and other Brahmins. Jai Singh II made franchises for carrying on business and reductions on some taxes. Distinguished artists and artisans were called from Delhi, Agra, and Mathura and provided all types of conveniences to them for settling in the city. Meanwhile, the purchasing capacity of these residents was considerable, and supportive population like workers and craftsmen found it profitable to settle here. So, a variety of craftsmen and industrialistsalso settled in the city. *Dastur-Kaumber* stated that Thakarsi, Bulaki and Beg Mohmad vendors of Agra came to Jaipur.

The width of the central roads was kept at 108 feet while the width of the minor roads was half of the central. The creation of 162 shops on each side of Johari, Sireh Deorhi, Kishanpol, and Gangauri Bazars while there were only 144 shops on the western side of the Kishanpol Bazar, all of constant size and shape was occupied 18 bighas and 16 bigha land. This shop's pattern was very helpful in the development of the city. The state declared the guidelines for the construction of private residential colony.

Then, the existing conditions include the higher classes to incorporate elements of designing houses like *Jharokhas, Jalis, Chhajjas,* and *Todas*, which contributed massively to the beauty and dignity of Jaipur city. From the mid-1730s, the city became the centre of astronomical activities for Sawai Jai Singh II and remained so until the death of Sawai Jai Singh II in 1743 (Roy, 2006).

II. Phase II- from 1801 A.D. to 1900 A. D.

This period covers the reign of Sawai Pratap Singh (1778-1803) and Maharaja Ram Singh II (1835-1880), the Anand Bihari Krishna Temple, Hawa Mahal, Brijnidhi Temple were built with fascinating structures 1790 A. D.during the reign of SawaiPratap Singh. According to Sharma (1997, p. 29), in the reign of Pratap Singh, astronomical activity at the observatory was ceased, and the observatoryitself was twisted into a gun factory for manufacturing guns.

Raja Man Singh- I won an immortal name as Akbar's famous Commander-in-Chief and so did Maharaja Jai Singh II as a General of Aurangzeb. In 1989, the foundation of the modern army hadbeen laid with the inauguration of Imperial Service Troops (H. H. 1967).

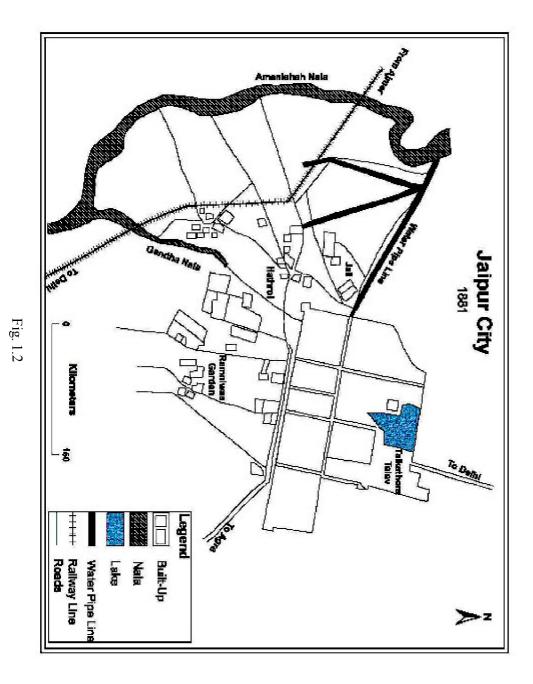
Earlier, Nawabpura and Jalupura constructed for Meenas and sweepers in the west and Fateh Tiba to the south, Badanpura and Khatik Mandi to the east. Further, prior to the British influence, the suburbs of Jaipur acted as permanent theatres of wars. Nobody was adventurous enough to expose themselves to such risks. Again it was also considered to be a matter of grace to have a residence near the Royal Palace.

All social amenities and harmony was established during the reign of Sawai Ram Singh II (1835-1880). His reign was the witness of the construction of Ram Bagh Palace, Ram Niwas Garden, Mayo Hospital, Civil Lines, Railway Colonies, and Roadways, etc. The residential areas like the Civil Lines and local officers and Railway colonies were also built. Most of them were constructed outside the walled city. The walled city was planned but no plans were repaired for the Jaipur remained confined to the city wall. The areas outside the city wall were treated as suburbs. Abul Fazal has quoted in *Ain-i-Akbari* about the high quality of ornaments of the city which was made by goldsmiths and jewellers of Rajasthan.

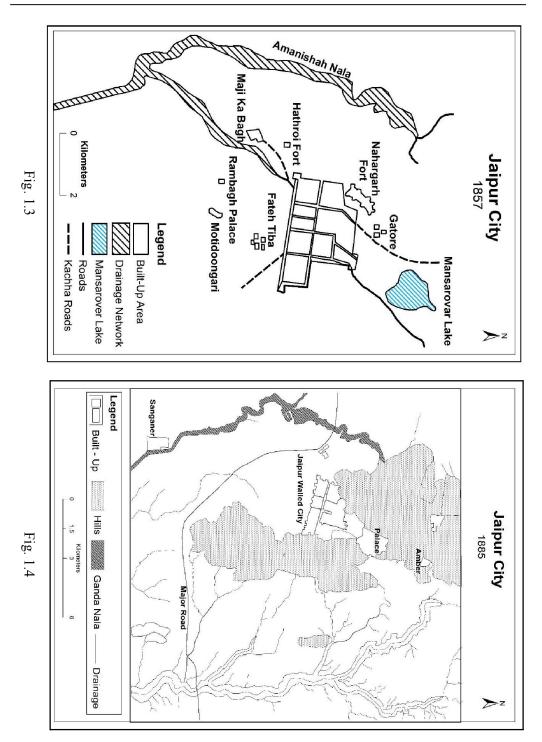
This observation is supported by a historic map dated to the 18th century by Sachdev and Tillotson, which associates with being from the period of Sawai Pratap Singh. This can be corroborated bythe fact, that in 1786-1787, Mahad ji Sindhia as the Imperial Regent and Commander-in-Chief of theMughal Empire invaded Jaipur and in 1787, Sawai Pratap Singh shut himself up in his capital and prepared to stand a siege (Sarkar, 1984, pp. 271, 273). This political situation could have inspired the setting up of the gun factory on the Jantar Mantar site.

Though a number of references mention that the Laghu Samrat Yantra was built by Maharaja Ram Singh, the historic map that has been inferred to be from the period of Sawai Pratap Singh (1778-1803) shows the Laghu Samrat Yantra, hence, the restoration and repair may have been referred to, and credit for construction of the Yantra given to Maharaja Ram Singh, when I saw it for the first time in 1882 it was in a very sorry condition and almost dilapidate. The Maharaja has had the observatory fully restored. From an inscription, I understand that itwas repaired in 1901. The instruments have been reconstructed so well that they look as if theyhave just been made today. The instruments were completely restored during the period with local masons, materials, andworkmanship.

The presence of bankers and merchants in the larger groups is an indication of commercial activities in the city ona high scale. The transport network run from Delhi to Ahmadabad passed through Jaipur city. As '*Siyah-Rukka*' stated that the city was market or precious stone likewise emerald, diamonds, and pearls, etc.



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III. Phase III - from 1901 A. D. to 2018 A. D.

Besides these, irrigation dams, public buildings Jaipur became the centre of administration, commerce, and trade. During the reign of Swai Madho Singh II, a metre line 118 km from Sanganer to Swai Madhopur was constructed. He also got constructed the Jaipur Shekhwati Railway over a distance of about 108 miles. The first motorcar in Jaipur City was also brought during this period. Jaipur began to spill over the walled city.

In 1923, the local body closed all the past practicing of closing gates at 11:00 pm was discarded and order was issued to keep Chandpol Gate open throughout the night. The municipality was recognized in 1926 and a new act of Jaipur Municipal Council was enforced in 1929. The Rebaris group was mainly engaged in the camel transportation which was hired not only traders but government also hired camels of the Rebaris for their business purpose especially for food-grains and salt transportation (Gupta, 1987)

The development of social amenities and the promotion of industrial growth was fasttracked the rate of urbanization in the city. Several rich noblemen, tradesmen, and well-todo gave up the unhealthy and congested living situations in the walled city and moved to the commuter belt. Fortunately, this period coincided with the reign of Sawai Man Singh II. The Municipal area of Jaipur expanded from 4.83km² to 40.23km² (Bahura, 1979, pp. 105-106).

The first step for housing the common men outside the city walls was taken in 1935 when a locality was planned for them in between the walled city and Mirza Ismail Road, west major land development schemes: i. Fate Tibba; ii. Medical College and Gangwal Park area; iii. Ashok Nagar; iv. New Colony and v. Jalupura and Bani Park were prepared for the development of the areas outside the city walls. Although the first scheme to be taken in hand was 'D' Scheme, Mirza Ismail laid emphasis on implementing 'C' Scheme quickly. The Bani Park Scheme was launched to the northwest of the city (Sarkar, 1984).

Sanganer, Sitapura Industrial Area of the city Malviya Industrial area towards southeast the city. Thus, all the major industrial areas of Jaipur are arranged like peers in a string the string representing the railway lines and are mainly located on the northwest and southwest of the city. This locality is known as the New Colony. In 1946, it was handed over to the Municipality for its maintenance.

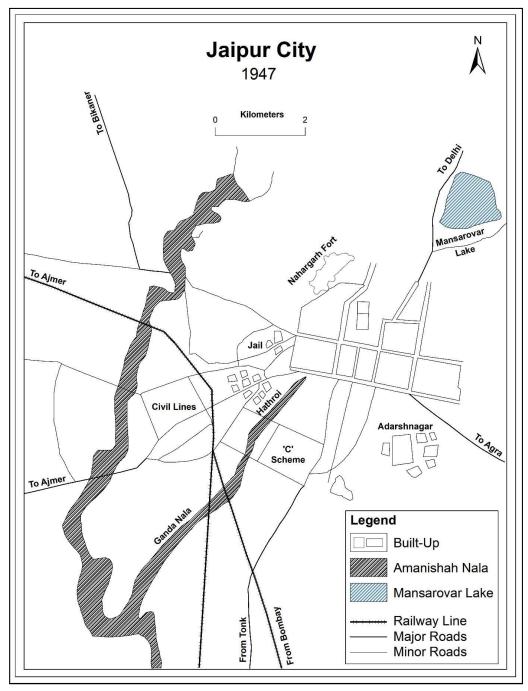


Fig. 1.5

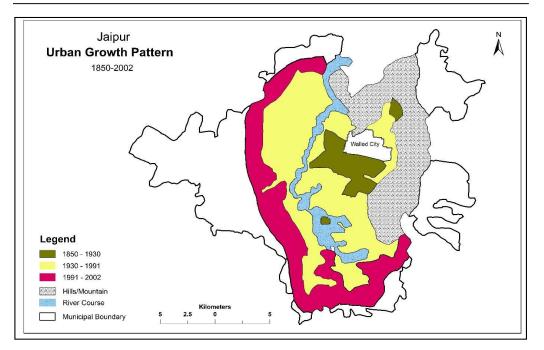


Fig. 1.6

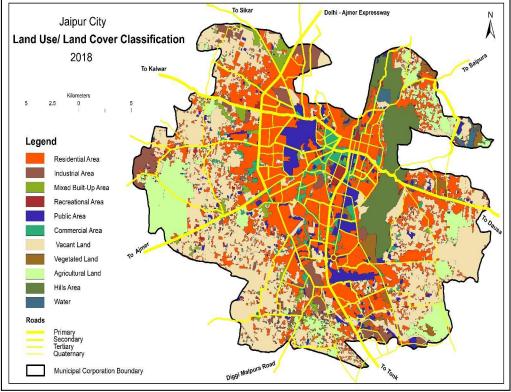
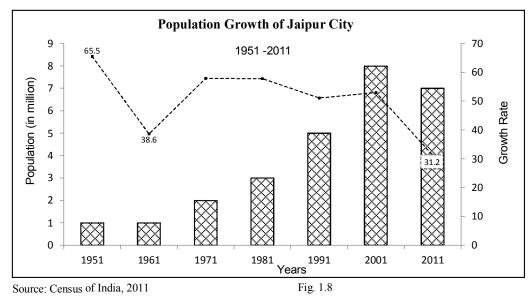


Fig. 1.7

Population Growth

Jaipur is the largest city of Rajasthan with a relatively higher level of per capita income. The city comprises of an area of 467.57 km² with a total population of 3 million in 2011. This accounts 1.6 million males and 1.4 million females. The census report (1881) gives as about 1, 50,000 population of Jaipur city and the next reports of 1891, 1901 and 1911 show that the decadal growth rate was 10 per cent. The boundary of Jaipur Municipal Corporation has been extended with different phases of time as it was 6 km² in 1931, 65km² in 1941, 104 km² in 1961, and 258.57km² in 1971.

After that area of Jaipur city had decreased from 258.57 km² to 210.09km² in 1981 and again increased from 210.09km² to 218.26 km² in 1991. Thereafter, as area increased by the demarcation of city boundary. Her maximum decadal growth was noticed in 1951 with 68.22 per cent because of migration from Pakistan to India after partition. In 1961, city growth reduced almost half of the last decade while again started growing at the rate of 55.17 per cent from 1971 to 1991. The annual growth rate of the pink city is 3.4 per cent and it ranks 7th in India.



Conclusion

The Jaipur City is gradually expanding its municipal boundary to meet the requirement of a newly added resident of increasing population. Residential area outskirt to walled city has increased 11.17 per cent in 2018. In 2018, many colonies have emerged as Geetanjali, Sunder Nagar, and Narayan Vihar, Kalyanpura, Sidhartha Nagar in the south-west part of the city. The industrial area has 12.66 km² increased between 2002 and 2018, which is 2.18 per cent of the total land. New industrial has emerged in the city like Harmada

Industrial, Taun Industries and Sitapura Industrial area in the south. The vegetated land in the city has changed with no-significance i.e. 0.32 per cent because of plantation in hilly terrain. The area under built-up classes has notably increased from 28.20 per cent (164.04 km²) in 2002 to 47.80 per cent in 2018 (277.75 km²). There is 1.18 per cent increased in mixed built-up area from 7.05 km² (1.21 per cent) in 2002 and 13.94 km² (2.40 per cent) in 2018.

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