

Rapid Urban Growth and Change in Urban and Municipal Limits of Bahawalpur City, Pakistan: A Spatio-Periodical Discourse

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Abstract: Cities all around the world being crowded rapidly with accelerating urban growth and resultant urbanization particularly in developing countries. Currently, Bahawalpur City is also experiencing rapid urban growth and change in its urban and municipal limits. Therefore, the key objectives of this research were to overview the urban population growth with passage of time, expansion in urban area and resultant delimitations in municipal limits of the city. Data about population figures and spatial change have been derived from various sources including census reports, Tehsil Municipal Administration (TMA), Punjab Development statistics etc. Periodical urban growth of the city is divided into four phases characterized with notable events that geared up the urban growth; particularly the last phase has brought more rapid changes. The population of the city is also surging rapidly. Urban area of Bahawalpur City was extended from 4,308.40 acres in 1974 to 7,373.9 acres in 2010, and had caused substantial reduction in agricultural land area and significant addition in residential area. Resultantly, City's municipal limits also have been altered and reclassified due to this urban stress and extended enormously with considerable fluctuations in agricultural and non-agricultural land area. Presently, City is continuously expanding outward, mostly in the form of housing colonies, roads, shops etc.

Keywords: Urban growth, municipal limits, agricultural land area, Bahawalpur.

1. INTRODUCTION

Urban centers all around the world are being crowded with humans as the trend of urbanization is accelerating with a rapid pace. Urban growth could be delineated as the increase in numbers of people in a city and it's a common and worldwide phenomenon in urban areas. While urbanization simply refers to the increase in proportion of population lived in cities but itself implies the movement of people from rural to urban locations [1]. Urban centers through the ages are truly the cradles of civilizations. They are the birth places of ancient glorious empires. They strengthen the region or country's economy and consolidate the social bases. Moreover, urban centers are attraction centers for rural population and, through multiplier effects, population sizes continue to grow concomitant with the demand for the services like hospitals, schools, industrial and commercial zones, security etc [2].

Cities in developed and developing world highly deviate in their physical condition, pattern and services. In developed world cities are usually well planed and growth and expansion is highly restrained on encroaching on natural areas especially farmland and forest land. It is found that in many cities both Europe and Japan define the compact city model as a desirable community structure that favors the efficient delivery of public services and cost-effective

development of the physical and service infrastructure [3]. In contrast, the cities in developing world are straggling and devouring suburban farmland and forests rapidly. Similarly in Pakistan, numbers of urban centers are increasing with passage of time [4]. This urban expansion is occurring at a very substantial rate [5]. During the last few decades, high population increase and consequent urban development caused consistent decrease in the vegetal cover of Lahore city [6].

The rapid population growth evolved the problem of un-controlled urbanization in many cities of Punjab and now being un-controlled for managing authorities as it has witnessed in Pakistan's second largest city Lahore [7]. In reality, the problem of rapid and un-controlled urban growth and its inevitable consequences on the city and regional landscape, especially in the developing countries have been a serious concern for scholars in urban and regional affairs as well as city managers [8]. In Pakistani cities, exponential urban growth is most striking demographic change that had occurred during last few decades. The urban population of Pakistan almost has become double from the time of independence [9]. This happened mainly due to the increasing pressure on farmland which has created high un-employment in rural areas population, and provision of infrastructure facilities in the urban areas that has lead to the urbanization. The imperative opportunities offered by cities, including industrial development, employment, health and educational facilities and better socio-economic conditions also

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boost urbanization [10]. This rapid urbanization has exerted heavy pressure on urban centers and guided to increase congestion in cities and demand for more resources for urban development and provision of facilities and services.

Census records depict that in Pakistan the increasing rate of urban population have risen from 17.7% in 1951 to 32.5% in 1998 [11]. The urban population that was only 6 millions in 1951 climbed up to 43 millions in 1998 [12-14]. It is projected that urban population in Pakistan will be equal to the rural population by 2030 when one out of every two persons will live in city and movement of people from rural to urban areas plays a main role not only in the growth of cities but also in terms of urbanization [15]. Although, this process is continuing from last few decades in Pakistan but has further accelerated after 1970s when major reforms and development took place in industrial and economic sectors. The mega city Karachi is the 1st biggest city of Pakistan and one of the rapidly growing cities of the world. It was covered by about 8.3 sq. km area in 1946 that increased with its suburbs and spreads over 3,530 sq. km in 2007, while the population of the Karachi has jumped from 0.43 million in 1941 to 18 millions in 2007 [16-18]. The average annual growth rate of the metropolis had taken place during 1955-2010 at an astonishing rate of 13.35% [19].

The high population pressure in 2nd biggest city Lahore (Pakistan) transformed it from a medium sized city with an area of 31,000 hectares in 1951 to a large metropolitan with an area of 99,000 hectares in 2009, whereas the population has grown from 1.13 millions in 1951 to 9.29 millions in 2009. Furthermore, it is projected to become 105.55 million in 2020 [20, 21]. Similarly, Faisalabad turned to 3rd biggest city of Pakistan due to this rapid urban growth and industrial development. The population of the city was just 9,171 in 1901 that increased to 179,127 in 1981 and further jumped to 2,008,861 in 1998, and in 2011 it is estimated to be 3,173,487 [18,22]. Resultantly, the area of the city has expanded from 5,661 hectares in 1980 to 9,480.44 hectares in 2010 [23]. Bahawalpur is the 12th biggest city of the Pakistan and one of the rapidly growing urban centers in Punjab province [24]. It is not only the district headquarter but also prime urban centre in Bahawalpur division.

City is the focal attracting place for surrounding rural inhabitants for seeking employment and job opportunities and educational hub for learners and

students to be benefited from elementary level to doctoral level education. So the migration from rural to urban area plus natural increase are two main contributors in city's growth that gone on fly and drastic rate from recent few years. In other words, Bahawalpur City is a Monocentric City. Monocentric cities simply refer to those which provide wide range of facilities and services to urban people plus surrounding countryside and acts as a nucleic hub for periphery localities. Keeping in view the centrality of Bahawalpur City, the key objectives of this study were to overview the urban population growth with passage of time, expansion in urban area and resultant delimitations in municipal limits of the city.

2. MATERIALS AND METHODS

2.1. Data Collection and Sources

Current study chiefly based on the secondary data due to requirement and nature of work. Moreover, the objectives of the study also kept in view in the data collection phase of the research. To access urban population growth and delimitations in urban and municipal limits of the Bahawalpur city, data about periodical change in urban population growth, population figures and spatial change have been derived from numerous sources. Among these, District Census Reports (DCRs) of 1951,1961,1972,1981 and 1998, Tehsil Municipal Administration (TMA) of Bahawalpur City, Punjab Millennium Development Goals Report (2011), Punjab Development Statistics (2012) and first Bahawalpur Outline Development Plan (1974) were considered major and were utilized for population statistics, growth trends etc. Moreover, few books and theses were also studied for review the problem. Base maps of Bahawalpur city urban area and municipal limits were obtained from TMA in raw form and further processed accordingly [25-30].

2.2. Data Formation and Manipulation

The obtained data from various sources and departments was not in ready and desired format. For instance, the base maps of the study area were not in good and acceptable form. Therefore, prior to analysis it was properly formatted and manipulated to shape in comprehensive meanings and better depiction and analysis. Additionally, the efforts were also done to ensure the data reliability and accuracy.

2.3. Analysis and GIS Mapping

To get a broad overview of the city's growth and associated main events it was discussed under four

periodical phases based on population increase, development and resultant change in land use and city municipal limits. Supporting maps of urban and spatial expansion to visualize the urban growth impact on fringing agricultural lands and municipal limits were prepared by Arc GIS 10.1 software using on screen digitization, geo-referencing, rectification and reshaping functions. These maps clearly indicate the urban expansion and changes in spatial boundaries of tehsil and city of Bahawalpur with the aid of necessary discussion.

3. RESULTS AND DISCUSSION

3.1. Periodical Urban Growth in Bahawalpur City

Bahawalpur City was once famous as a tiny village named *Bahamanabad* and *Sodha Jhoke* [31]. The journey of turning from a small village to a big city had stretched over almost three centuries. It was densely occupied by mango and dates gardens, orchards and lush green fields with plenty of water by river Sutlej now speedily turning into urban and commercial built-up land. Urban growth has created some severe problems in which most significant is the conversion of valuable resource of farmland into other uses which in turn posing serious threats on food supplies and environmental stability of the region. Before it, the city was confined within walls, having characteristics of medieval type of city until 1940's. But later, it represented a dramatic increase both in population and city spatial expansion. Few decades back, there were only few famous public buildings, palaces and places existed in Bahawalpur city e.g. Govt. Sadiq Egerton (S.E) college, Govt. Abbasia higher secondary school, Bahawal Victoria Hospital (BVH), Noor Mahel (Palace) etc. Population of the city was limited in numbers and agglomerated in walled city but in the ending days of Abbasi era before the annexation of Bahawalpur State along with Pakistan, the population was boosting up with the aid of different events and causes. Therefore, the growth and development of the Bahawalpur city has encompassed through some periods of time which can be divided into four major phases:

First phase (1778–1943) - This stage may be called primary stage

Second phase (1944–1973) - This stage may be called medieval stage

Third phase (1974–1999) - This stage may be called the expanding stage

Fourth phase (2000–to till date) - This stage may be called the exploding stage

First Phase (1778–1943)

First phase was spanned during 1778-1943. It was early or primary stage in growth or expansion of the city, that is also known as stage of "Walled city" as the city was confined within the walls. At that time, Bahawalpur was a typical wealthy princely state and governed by Nawabs (royal noblemen). After the death of Nawab Muhammad Bahawal Khan V in 1907, his son Sadiq Muhammad became the ruler of the state. He was very keen to masses welfare and development and knowledge friendly person. During this time the population of the city very limited. Few mega projects launched by Nawab Sadiq Muhammad V on his own interest for the welfare of his masses enhance the population and agricultural activities in Bahawalpur like Sutlej valley project (1922) the mega project with the aid of local and British engineers to provide perennial and non-perennial water controlled irrigation to Bahawalpur state from Ferozepur, Sulemanke, Islam and Panjnad headworks. The main purpose of this project was to facilitate old inundation canals which ran four to fifth months in a year [32]. Secondly, canal irrigation system (1925) was initiated to irrigate major portion of lesser Cholistan desert and state's other dry parts. Thirdly, new towns and housing schemes were developed, like town planning scheme (1943) to settled new inhabitants. Such all projects caused steady growth in population and population of the Bahawalpur city started to expand particularly Sutlej valley project brought prosperity in the State but it also resulted in the influx of migrants from central Punjab that later in some parts of the state outnumbered the locals [33].

Second Phase (1944–1973)

Second phase also known as a medieval stage. During this stage, some important events took place that causes acceleration in city's population. Firstly, the existence of Pakistan that came into being in 1947 reasoned a flood of humans in Bahawalpur, as it was adjacent with the neighboring country India. Secondly, the establishment of new planned housing schemes to settle these immigrants. Thirdly, the mergence of Bahawalpur state into one unit (1955) that made Bahawalpur city as district and divisional headquarter actually open the new path of development and constructional activities. New government offices were built and new housing projects were started, like Model town A, B, C, Bhata No. 1, 2, 3, Islami colony, Shadra colony, Sadiq colony etc., and Bahawalpur was been

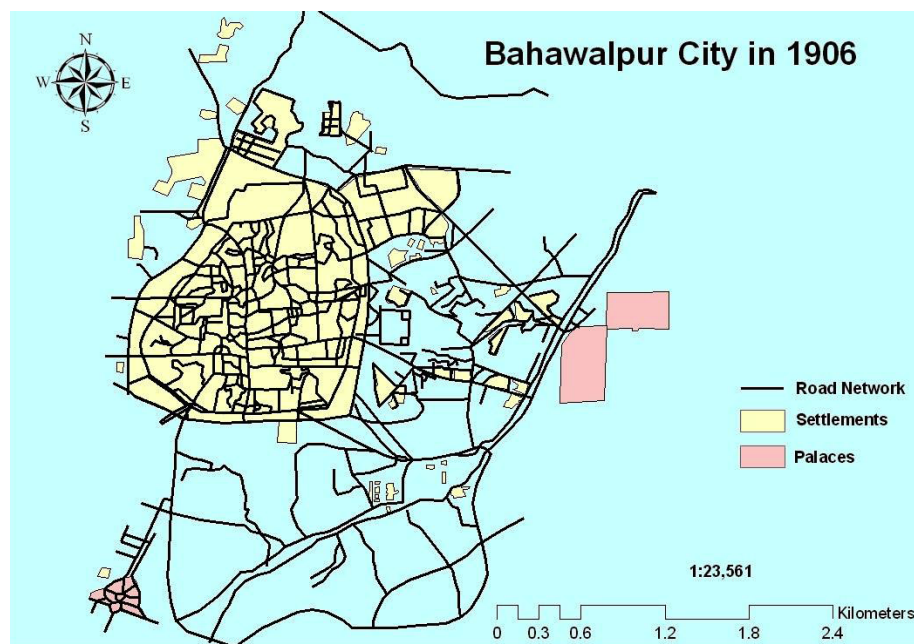


Figure 1: Areal Expansion of Bahawalpur City in 1906.

Source: [34].

expanded outward from walled city. At that period of time, city started to exaggerated outward from its walls and population started to increase exponentially. City that was once confined within an area of 1.5 sq. km surrounded by a wall later occupied an area of 17 sq. km and it is still stretching outward [35]. Later, Indo-Pak war (1965) also brought many significant changes in population patterns when inhabitants of upper Punjab's cities moved to southern cities of Punjab. At the end of this phase, the devastating flood of 1973 caused enormous human and animal casualties and vast damaging of properties, and crops in Pakistan. The ultimate effect came in the form of huge in-migration of victimized persons from upper and central Punjab to Bahawalpur City and many of those were resided there permanently. This in-migration highly modifies the demographic profile of the city and also geared up city spatial expansion.

Third Phase (1974–1999)

Third phase is also known as expanding stage as it is witnessed the rapid outward expansion of the city. For instance, during this period, urban growth rate has been recorded nearly 5% per annum [13]. In this period, some important events on national and international level occurred which changed the entire image of the country e.g. 1979 Afghan war caused flood of humans on Pakistani land. Such humans surging put bad impacts not only Pakistan's economy but also shakes social basis of the country. During this

war, about 4 millions immigrants invaded on Pakistani land which spread and settled throughout of the country. Bahawalpur City was also hit by these immigrants, and significant numbers of Pakhtun (Pashto speaking people) came here and resides permanently. They caused to bring change in city demographic profile. Instead of Afghan war, several important events on national level also affected city's population figures and resultantly Bahawalpur City extended at high rate. During that time period, many industrial and commercial projects also started in Bahawalpur region in order to bring prosperity and economic welfare. Small and heavy industry sites determined and proliferations of agro based industrial units were installed. In the ending decades of 20th century, some planned housing scheme projects i.e., Model town C, Satellite town, 3 Marla housing scheme also inaugurated by Govt. housing and town planning authority to provide cheap and reliable housing facilities to local inhabitants [36].

Fourth Phase (2000–to Till Date)

It is manifested that after 1940's, the city exhibited a faster growth, as a result the city expanded spatially. According to the last national census of Pakistan (1998), the population of Bahawalpur grew at a rate of 4.93 % per annum during the inter census period of 1981-1998 [13]. This growth rate was the second highest after the capital city of Pakistan Islamabad. As a result, the nature and form of the city has changed

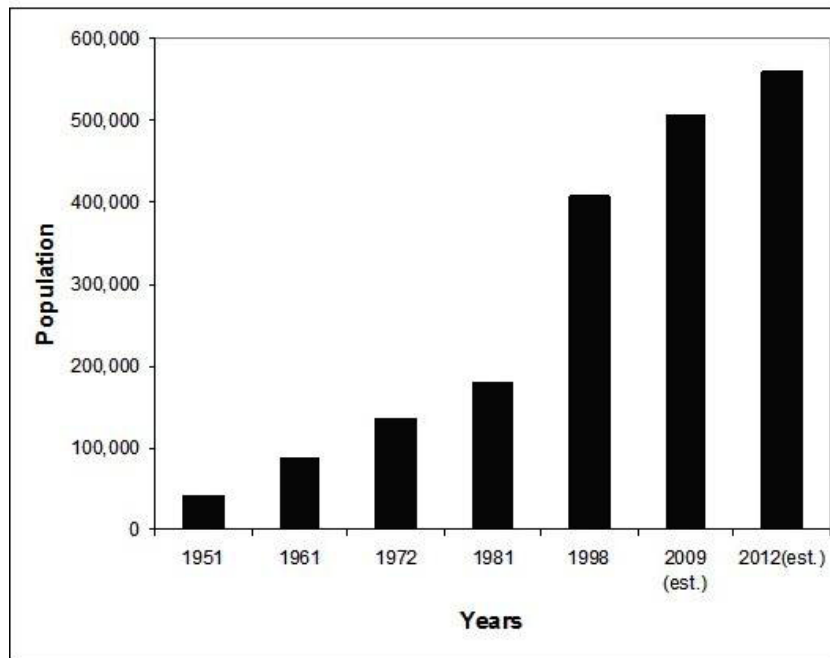


Figure 2: Census Wise Population of Bahawalpur City.

Source: [37].

rapidly, especially during the last quarter of the century. Since Bahawalpur is not a typical industrial region yet the estimates shown a dramatic increase in city's population over the last few years as population of Bahawalpur City that was about 408,305 in 1998 last national census of Pakistan jumped above 560,588 in 2012 with a high growth rate of 3.08 per annum. It shows that 152,283 souls were added in population within 14 years time span and further magnifies the scenario of exponential urban growth (Figure 2).

Many newly planned development projects by the district Govt. and TMA Bahawalpur city caused an unstoppable increase both in city population and its spatial expansion. This last phase (2000–to till date) also witnessed the inception of enormous private housing schemes on prime agricultural land for the provision of alleged standard modern housing and living facilities. But the core aim of such predominant un-authorized housing schemes was to earn more profit. According to a recent study, during 2000-2005 about 31 illegal housing colonies have been converted 379 acres of vital cultivable land in Bahawalpur City. These housing schemes have caused the depopulation and created an urban sprawl at peripheries.

3.2. Spatial Urban Growth in Bahawalpur City

Due to this urban rage, city is being expanded spatially in all directions with a significant pace. The

prominent drivers of this areal expansion were increase in city's population, boosting commercial activities and resultant inflation in land values, private housing schemes with considerable land area, extension in municipal services like roads, hospital and educational institutes etc. to city's far off places, preferences of rich people etc. Notable changes have been observed in the area occupancy of urban land in Bahawalpur City during last three and half decades. Table 1 and Figure 3 show these urban area variations between 1974 and 2010. City's total urban land area was 4,308.40 acres in 1974, wherein residential area had a leading share of 1,468.78 acres (34.09%) whereas agricultural land area was 1,147.06 acres (26.62%) and was ranked second after residential area.

But during 2010, major changes have been observed that based on careful estimations done by different reliable sources, like TMA Bahawalpur city. Residential area was again dominant and even had further increased from 1,468.78 to 3,802.55 acres (51.56%) while agricultural land area had depicted significant fall and shrank 3.22 acres (0.04%) from 1,147.06 acres (26.62%) in 1974. This very scant amount exists within urban vicinity, and was allocated for forage crops and plant nurseries. Meanwhile, area occupied by roads and industries also highly increased that was closely interlinked with development and overall growth of the city (Figure 4). Public places, buildings and educational institutes etc., also

Table 1: Urban Land Uses in Bahawalpur City (1974 & 2010)

Sr. No.	Land Use Type	Area in 1974 (Acres)	%	Est. Area in 2010 (Acres)	%
1	Residential	1,468.78	34.09	3,802.55	51.56
2	Agricultural	1,147.06	26.62	3.22	0.04
3	Roads	710.19	16.48	1,234.12	16.73
4	Industries	29.06	0.67	412.44	5.59
5	Others	953.31	22.13	1,921.67	26.06
	Total	4,308.40	100	7,373.90	100

Source: [38].

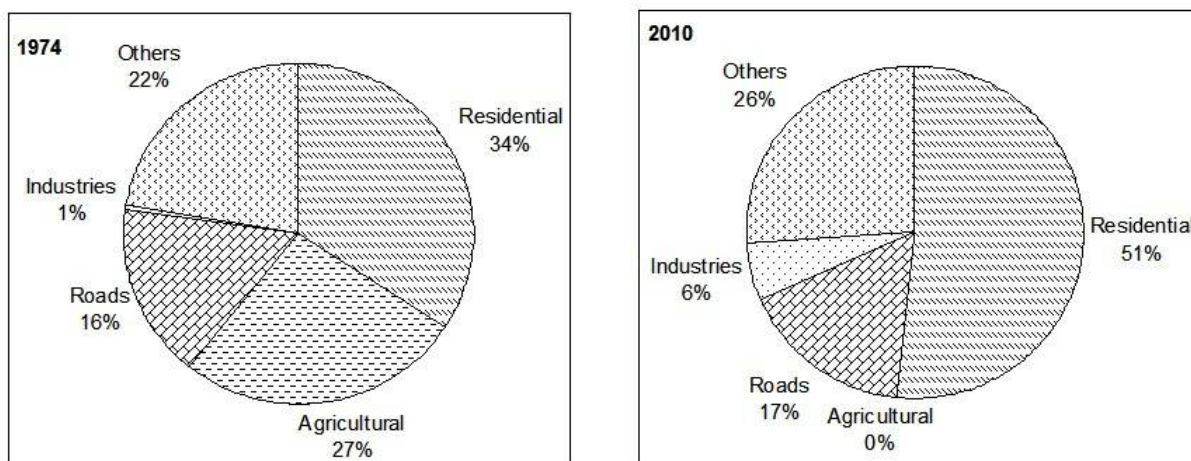


Figure 3: Major Urban Land Uses Variations (1974 & 2010).

Source: [38].

significantly enhanced and placed in others (Table 1) that were 953.31 acres (22.13%) in 1974 to 1,921.67 acres (26.06%) in 2010.

Table 2 and Figures 5 and 6 made a comparison between the municipal limits and major land uses in 1992 and 2005. Figure 5 shows the municipal limits of the Bahawalpur city in 1992 derived from TMA city. The base map was created in 1992 by the local Govt. architect and had illustrated the city limits and Mouzas (A small revenue estate comprising more than one villages and towns). Major roads those connect the city from surrounding Tehsils (Subdivisions) also shown in the map. At that time, the city had a significant place in agricultural products and various cotton ginning; oil extracting and flour mills were located in periphery of the city. The total municipal area of the city was 26,650 acres including its 19 Mouzas or Union Councils (UCs) (Local revenue estates).

While, Figure 6 depicts the city municipal limits in 2005 when TMA Bahawalpur city has emerged and city limits were reclassified and changed, including rural

and urban union councils (UCs). TMA Bahawalpur is divided into Bahawalpur Saddar and Bahawalpur city where Bahawalpur Saddar consists many rural UCs and Bahawalpur city consists 21 UCs, including 18 urban and 3 rural (Table 3). As a result of this reclassification, city land area is also increased to 78,484 acres. In 1992, the city municipal area covered with large share of agricultural land area that was 19,926 acres (74.8%) out of total area of 26,650 acres. Whereas, un-cultivated land area that was mainly occupied by residential, commercial, industrial etc., uses had comprised of just 6,724 acres (25.2%). In 2005, the city area increased due to reclassification by TMA city and had reached 78,484 acres where agricultural land (cultivated land, pasture land etc.) area were occupied 57,355 acres (73%) and un-cultivated area was 21,129 acres (27%). These figures show that a slight change came in municipal limits of the city. Particularly, rural-urban interfaces have been proved susceptible for this outer rage of urban expansion. People had preferred here to purchase vacant plots and build new, big and luxurious

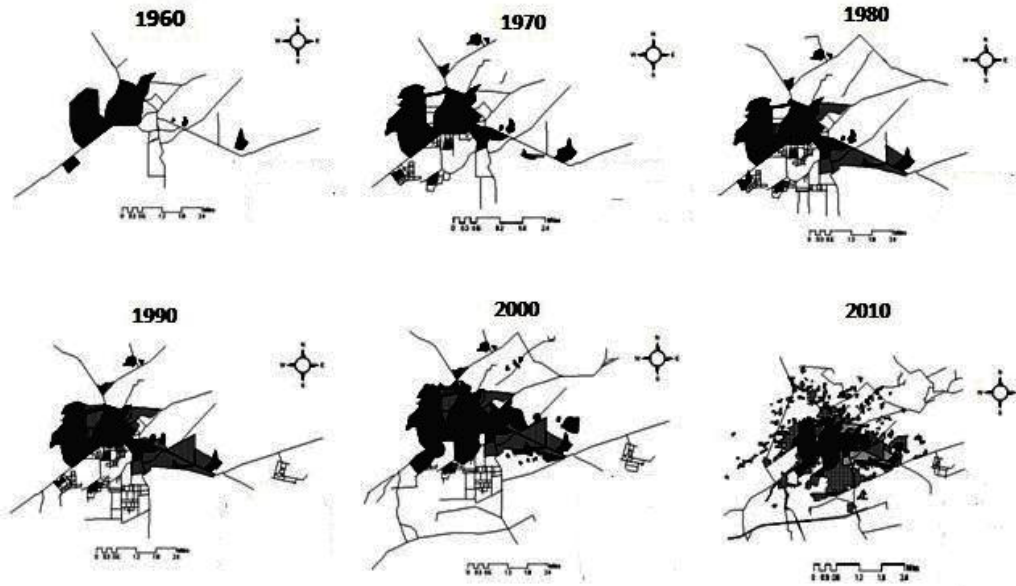


Figure 4: Urban Spatial Growth of Bahawalpur City from 1960 to 2010.

Source: [24].

Table 2: Bahawalpur City Municipal Land Area (1992 & 2005)

Year	Total Area of the City (Acres)	Agricultural Land (Cultivated land, Pasture land) (Acres)	Non-Agricultural Land (Residential, Commercial, Industrial) (Acres)
1992	26,650	19,926	6,724
2005	78,484	57,355	21,129

Source: [37].

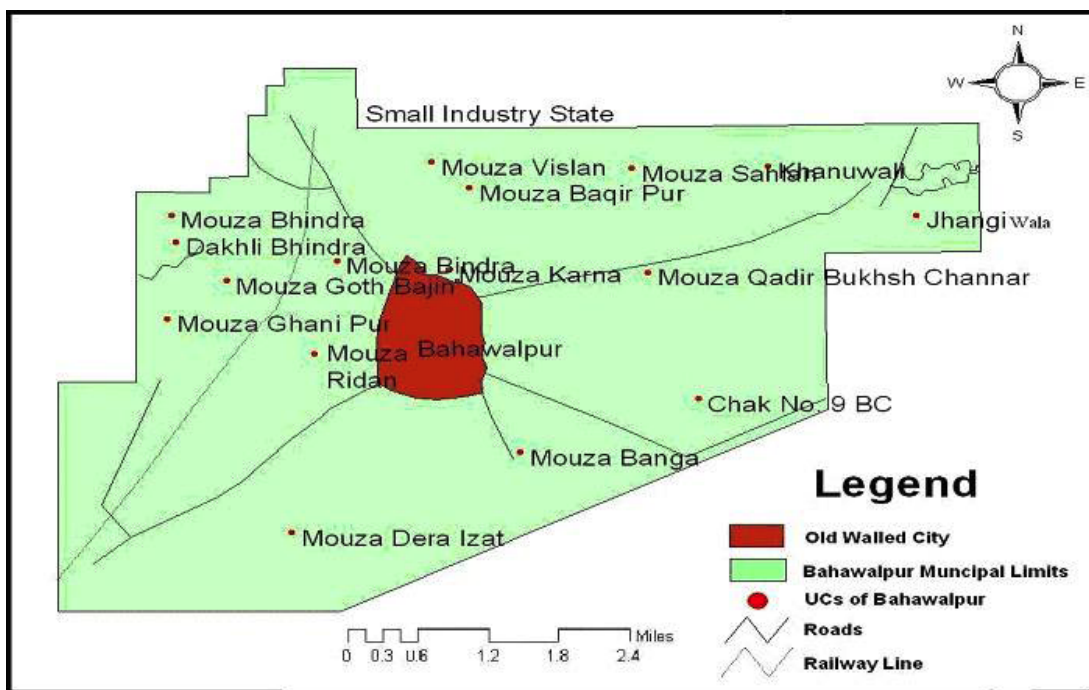


Figure 5: Bahawalpur City Municipal Limits in 1992.

Source: [37].

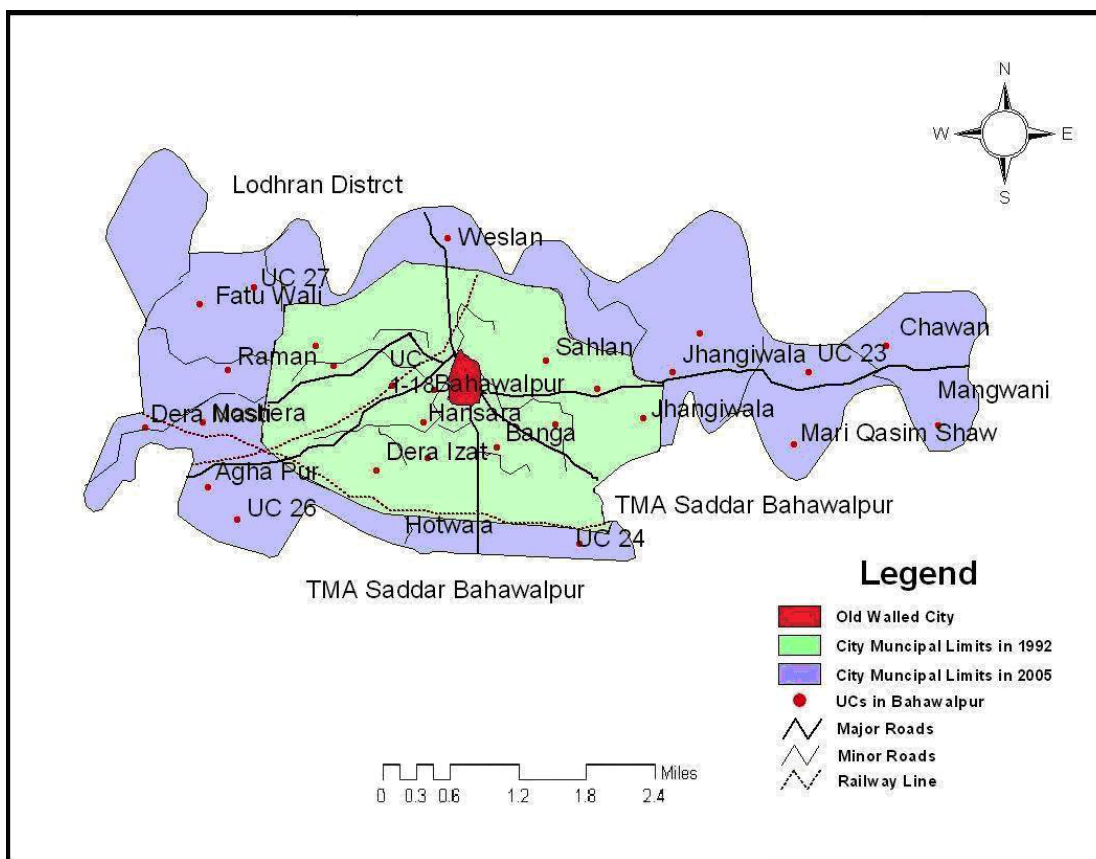


Figure 6: Bahawalpur City Municipal Limits (1992 & 2005).

Source: [37].

Table 3: Number of Union Councils and their Population in Bahawalpur City

No. of Union Councils			Population (Thousand Persons)						1998 Urban Population (%)
			As per 1998 Census			Est. on 31-12-2011			
Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	
21	18	3	467	408	59	656	560	96	87.4

Source: [29].

multistoried bungalows located considerably away from city urban areas. The household sizes of such rich people often were small as compared to the space covered by these luxurious bungalows. Therefore, outcome first came in low density residential sprawl that later become congested into colony with the constructions, and further development in the form of houses, road network, streets and other infrastructure. The amount of agricultural land eventually has decreased significantly.

Hence, presently city is expanding in all directions with a significant pace (Table 4 and Figure 7). Population is increasing and developments took place within and outside the city limits in the form of roads (constructing and widening), sewerage system

(repairing and expanding), mega housing and utilities provision projects etc. In recent years, no doubt, Bahawalpur City has gained increasing importance due to its geographical, natural and demographical circumstances. Previously, it had low rate of urban growth and ultimately the less spatial extent. At that time, the amount of farmland was also limited due to the use of conventional methods of farming and scant irrigation facilities mainly rely on the water of river Sutlej.

4. CONCLUSION

Bahawalpur was once a small town confined within walls. In the ending decades of 20th and beginning of 21st century, Bahawalpur City had experienced

Table 4: Key Changes in Areal Extension of Bahawalpur City during Last Few Years

Direction	Key Changes in Recent Years
Common to all	<ul style="list-style-type: none"> Development of new massive roads i.e. Northern and Southern bypass Widening of existence roads Expansion of city in almost all directions Population of city is increasing exponentially with over 3.08 % growth rate Model Bazaar Establishment of new hospital Establishment of drug testing lab Development of new housing schemes Filling stations
North	<ul style="list-style-type: none"> i. Widening of existence road ii. Construction of northern bypass that linked with N5 iii. Construction of new road iv. Construction of overhead bridge v. Scattered houses
East	<ul style="list-style-type: none"> i. Construction of new housing schemes (Allama Iqbal town, Al-Khair town, Al-Jannat town, Shadman city etc.) ii. Construction of <i>Jhangiwala</i> road iii. New district 410 beds hospital iv. Drug testing lab v. Proposed filling station
West	<ul style="list-style-type: none"> i. Decrease in the <i>zakhira's</i> (forest) total area ii. Development of new housing schemes iii. Expansion in local settlements iv. Filling stations
South	<ul style="list-style-type: none"> i. Construction of new roads i.e. southern bypass that linked with N5 ii. New housing schemes (Rehman garden, Khyaban Ali etc.) iii. Expansion in existing colonies (Islamic colony, Millat colony, Dilawer colony etc.) iv. Govt. department offices (New regional campus of Allama Iqbal Open University etc.)

Source: [24].

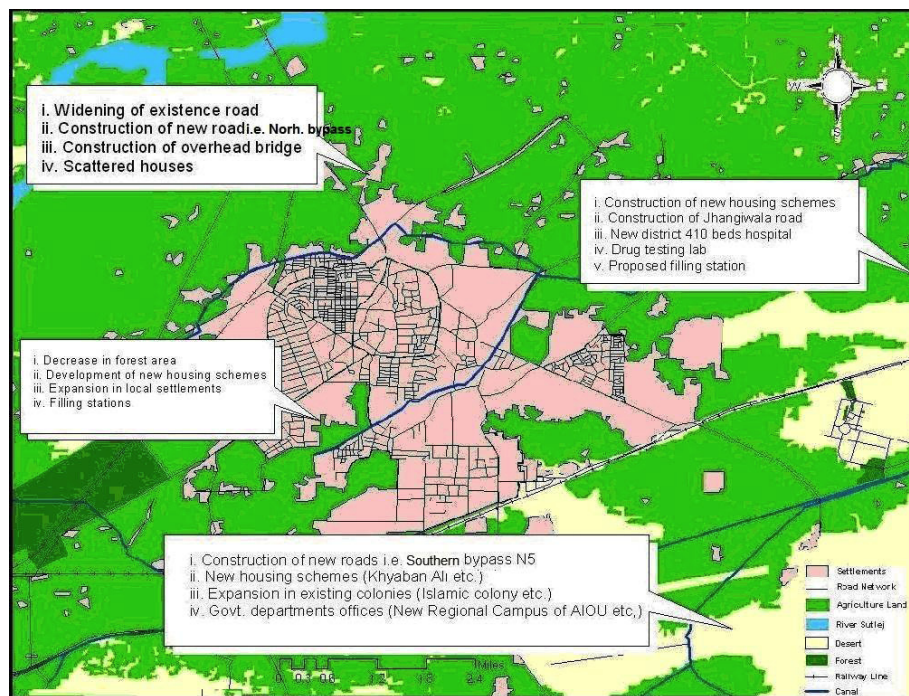


Figure 7: Key Areal Changes in Bahawalpur City during Last Few Years.

Source: [24].

explosion in its population and areal extent. Periodical urban growth phases of the city were characterized with notable events that speed up the urban growth particularly the last phase (2000-to till date) has brought more rapid changes in urban population and spatial extension of Bahawalpur city. The surging population of the city had estimated about 560,588 in 2012 despite it was just 408,305 in 1998. The ultimate effect of rapid urban growth came in the form of city's spatial expansion that is mainly the output of this population increase. City's urban land area was enhanced with considerable addition in residential area of 1,468.78 acres (34.09%) in 1974 to 3,802.55 acres (51.56%) in 2010 and significant reduction in agricultural land area of 1,147.06 acres (26.62%) in 1974 to just 3.22 acres (0.04%) in 2010. Furthermore, the municipal administrative boundaries and total agricultural area of the city in 1992 was also altered greatly and reclassified in 2005 due to high pressure of urban population with boosting services and infrastructural demands i.e. housing, roads, commercial structure etc. Presently, Bahawalpur City is emerging as an important administrative, educational, health, recreational and trade centre in the region and this urban encroachment is rapidly keeps on with proliferating housing schemes in peripheral cultivated land.

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