



Growth and Pattern of Urbanization in Pokhara Lekhnath Metropolitan City

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Abstract

The economic development and the development of a country is strongly integrated. So that many countries in the world are going through a rapid process of afforestation. Every part of the earth's surface land is unique in its cover and access. Most major city areas face growing problems of city and sub-city dispersal, leading to the damage of natural tree and open space. The lack of area and connectivity to wetlands and wildlife habitats in general is due to increased city growth. The current status of major cities in Nepal is a rapidly changing model of urban land use. Since Pokhara was declared Nagar panchayat in 1959. Pokhara had 13 wards cover an area of 30.13 km². Nepal is currently going through a massive land cover change through conversion of agricultural land into residential and commercial areas.

Keywords: Urbanization, market center, growth, pattern.

Introduction

Urbanization is the movement of people from rural areas to urban areas. The word urbanization was derived from the Latin word 'Urbs' and the word first used in Rome. The movement of people from one area to another area or solely with agricultural land to other communities generally larger whose activities are primarily centered in local administration, trade, manufacture or associated interests (Marshall, 1920). Urbanization refers to the process of growth of settlement with the proportion of population living in that areas. The growth and movement of population plays a central part in the urbanization process. It is a process whereby society is transformed from predominantly rural to urban area. Urban area is the place where occupation of the people is nonagricultural and government also provides many facilities like health, education, transport, communication etc. On the basis of population and different available facilities present, urban area of Nepal are classified into three types, *Mahanagarpalika*, (Metropolitan City)

Upamahanagarpalika (Sub-Metropolitan City) and *Nagarpalika* (Municipality).

The basic feature of the afforestation is the structural changes in employment from agriculture to non-agriculture. A distinctive division of labors technology-based production of goods, trade of variety of goods and services high level of economic interaction and relatively high density and diversity of population are basic associated with urbanization. Its process by which village turns into towns and towns develop into cities on large cities. Urbanization and economic growth of a country are strongly related. So that many countries of the world are undergoing rapid urbanization process. It is the most powerful movement of modern time. It is extremely new phenomena in human society, so recent that its rapid growth and functional potentialities are hot yet thoroughly understood as required. The term urbanization is closely associated with the level of economic activities, land-use, and distribution of population and facilities of education, drinking water, health and communication. Urbanization is a two-way measure since it includes not just development from rural to urban areas and change from farming occupation to business, exchange, administration and calling however it additionally includes change in the transient's mentalities, convictions, qualities and personal conduct standards. The course of urbanization is fast changing from one side to the other. The offices like schooling, medical care framework, business roads, city offices and social government assistance are purposes behind drawing in individuals to metropolitan regions (Thompson, 2006). Urbanization primarily refers to elements of the extent of complete public living in metropolitan regions. Different components of urbanization are the convergence of country's multispectral practical focuses and foundations. The critical spaces of concern and significance in urbanization are the metropolitan poor and slum settlements, practical vehicle, financial turn of events, accommodating mechanical turn of events and its ecological effects, and changes and patterns in administration (Sharma, 2003).

Urbanization indicates to the course of development and decline of financial agglomerations. The example of centralization of financial action and its development have been observed to be a significant determinant, and for some situation the outcome, of urbanization, the construction of urban communities, the association of monetary action, and public monetary development. The size dispersion of urban areas is the consequence of the examples of urbanization, which bring about city development and city creation. The distribution of size of cities is the result of the model of urbanization, which leads to the development of city and city creation. The evolution of size and distribution of the city is closely linked to the national economic development of any country. The focus of population and economic activity in urban areas increases as people emigration from rural areas to urban areas. Because the economy develops for both population and its production, which leads to rural growth along with the city. Until agricultural productivity increases enough, the city centers can't be left out so that people can move from the ground and not dedicated themselves to activities that do not

produce food (Hagen, 1970).

All aspects of land on the world's is different in the land cover it has. Land use and land cover are unique yet firmly connected attributes of the earth's surface. The utilization to which we put land could be touching, agribusiness, metropolitan turn of events, logging, and mining among numerous others. While land cover classes could be cropland, forest, wetland, grassland, streets, urban areas among others. The term land cover initially alluded to the sort and condition of vegetation, for example, timberland or grass cover however it has expanded in ensuing use to incorporate different things like human designs, soil type, biodiversity, surface and ground water. Land use mentions to the land, which is utilized for the specific purpose. Thus, the difference in land use is the human alteration of indigenous habitat into assembled environment like fields, grasslands and settlements. Most significant metropolitan regions deal with the developing issues of never-ending suburbs, loss of regular vegetation and open space, and an overall decrease in the degree and network of wetlands and natural life environment. The general population relates to these issues when they see private and business advancement supplanting lacking area around them.

Developed countries still have strong use of the city areas for various purposes. Similarly, non-commercial functions occupy space mainly in the mountainous region. But in developing countries like ours, some city core stake is still dedicated to agriculture. Therefore, the city economics are mainly based on agriculture. Nevertheless, the current situation in major cities of Nepal show a rapidly changing model of urban land use.

Land is a point where all human activities are being carried out and the source of the products required for the transformation of human activities they conduct. People use land resources and give birth to land use that differs from the purpose served by it, that is food production, settlement, entertainment, mining and processing of finished goods, etc., as well as biophysical properties of the land.

The total land area in Nepal is about 14.7 million ha. Cultivable land occupies about 27 per cent of the total land area. Not all agricultural land in the country is used under cultivation, it is estimated that about 20 per cent of the total land is under agriculture. About 11.5 per cent of the total land area is occupied by grazing land. Most of the pastures are in the northern belt of the country. About 38.1 per cent of the land is under forest and about 4.7 are under the saplings and the burner estate. The land use model is rapidly changed; The growing pressure of livestock along with human beings is the main factor in its management. (LRMP, 1978).

Methodology

This study is based on GIS and remote sensing integrated approach for detecting the urban land cover especially the urban growth pattern from 1978 to 2017. Secondary data sources were also used to analyze the data which were obtained from the office of the statistics, Pokhara.

National Urbanization Pattern

Nepal has low degree of urbanization as far as both metropolitan city and the number of towns. According to Census 2011, the urban population (population residing in 58 municipalities) constitutes 4,523,820 (17 %) of the total population whilst it was 3,227,879 (13.94%) according to census 2001. In the 18th century, urban centers in Nepal were developed mainly in Kathmandu valley including Kathmandu, Patan, Bhaktapur, Thimi and Kirtipur were the main urban centers in the Kathmandu valley. After the unification of Nepal, Butwal, Tansen Ilam etc, were emerged as the new trade centers outside valley.

Histogenesis of Pokhara Lekhnath-Metropolitan City

In the past, Pokhara was essentially a market center located in the vast Seti valley and its branches. Due to the location between the mountain and the terai, it became an important production point between the East-West and the Trans-Himalayan Trade Route (Gurung, 1965). Pokhara's history was found to have begun with temporary religious gatherings during the medieval period and the permanent market was created only after Nepal's integration into Bhairav Tolle in 1769. However, in prehistoric times, prehistoric people were seen living in the hills of the mountainous Region of Pokhara before settling on the valley floor (Shretha, 1996). Kaskikot, Sarangkot and Dhampus were such prominent prehistoric settlements. Houses were being sifted into the city and there was no sign of the city in the past. It was located in rural inner areas under the rule of Parbat King (Chemjong, 1996).

Although the medieval period was the dark age of Nepal, the Gandaki basin (together with Kaski) in the central Nepal and the Karnali basin in the western Nepal had demonstrated the evolution of commercial settlements. They confined to the hilltops. In the 12th century when Prithvi Malla dominated the western Nepal as far as Kaskikot (Tucci, 1977) Pokhara valley floor was a origin land. It was only during the regime of Kulamandan Shah of Kaski Principality who selected Batulechaur village as the winter capital. However, according to Pahari Chronology, Baidam settlement was in to existence since 1605 B.S. Kaski ruler settled Newar from Bhadgaun to operate metal-works and trading activities in Pokhara. The evidence shows that the urban history of Pokhara began from the last phase of the medieval period.

The modern history of Pokhara municipality starts from 1785 B.S when the assault of the troops of the Nepalese king Rana Bahadur Shah during the regency of Queen Mothe Rajendra Laxmi Devi Shah annexed Kaski to unified Nepal. During the time of annexation, Pokhara was in the form of a rural market center (Gurung 1969).

The city of Pokhara had linear market development up to Purano Tundikhel in the north, and Kundahar in the east until 1961 which remained as the core of the kingdom of Kaski until Mahendrapool developed as the center of the market. It has been found that Pokhara City is the result of long development efforts and the strategic location of the attractive valley in the central part of the nation. Before 1958, it was considered as a Village Panchayat, because it could not attain the minimum size of population to declare as a Town Panchayat. In 1961, it was accounted for the low-grade town panchayat in terms of population size i.e. 5000. Eradication endemic of malaria, establishment of commercial activities, educational institutions, and British and Indian pension paying camps attracted the peoples of surrounding areas. Construction of the Prithvi and Siddhartha Highways along with administrative establishment also attracted migrants to be settled down of the municipality.

Urban settlement started from Lamachautara area in Bhairab Tole and extended to old market area (Mohoria Tole via Ganesh Tole), Bagar. Similarly, the settlement also extended at Mahendrapool, Rambazar, and Mahendrapool to Bajhapatan area around 1978. Bindhyabasini was the most populated area where almost all the government offices were concentrated. Rambazar and Deep area came into existence after the establishment of Indian and British pension paying camps in 1950 and 1962 respectively. Bagar grew as an institutional area after the establishment of Shining Hospital (1952), Prithvi Narayan Campus (1961), Multipurpose High School (1950) and Sanskrit Pathshala (1902). Similarly, the establishment of Soldier Board High School (1957) contributed to the development of urban settlement at Amarsingh- Hospital area. Besides these, Prithvi Chowk Square, Rastrabank Square and Pardi Birauta were developed as the institutional area where most of the government offices were centralized after the execution of the physical Development plan of Pokhara. In the decade of 1990s, Lakeside and Damside areas flourished as the tourism and commercial centers.

Areal Boundary Expansion of Pokhara Lekhnath-Metropolitan City from 1971 to 2017

Extension of boundary of Pokhara Lekhnath Metropolitan City is linked to the development of the city. The rapid arrival of the emigration and vested interests of political leaders led to the expansion of the border of Pokhara Lekhnath Metropolitan City. Initially, Pokhara had 13 ward cover 30.13 km² area in the beginning. During the election of 1977 Chhiinedanda, Batulechaur and part of Lamachaur and Armala VDCs

were included in the territory of the city. These new areas designated as Ward No. 14, 15 and 16 which together constitute 25.76 Sq.Km area by changing the boundary of Ward No 7, 14 and 15 new Wards 17 and 18 were created during the general election of Nagar Panchyat in 1987. The ward No. 17 was limiting within boundary of Ward No 7 whereas Ward No. 18 was created by adjusting the boundary of ward No. 13 and 15. Later, 0.05 km² area of Sundar Ban of Armala, 0.24 km² area of Arba VDC, and 0.24 km² area of Sarangkot VDC were added in Ward No. 16, 13, 6, 17 and 5 respectively. Likewise, Ward No 13 was extended toward Prithvi Highway reducing 1.88 km² area of ward No. 14. The present Pokhara Metropolis area accounts for 464.2 km² after changes and extensions of boundary. In 2014 the Pokhara Sub-Metropolitan City was extended with an area of divided into 29 wards. The area changes to a large extent from 1971, 1976, 1981, 1992, 2014 and 2017 (figure 1a, b. c).

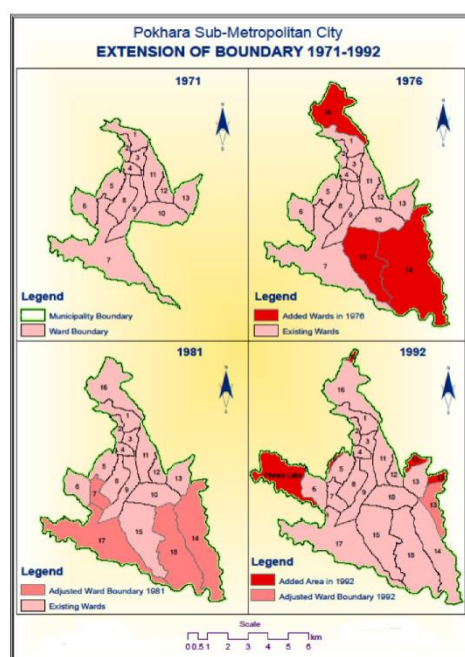


Fig. 1a

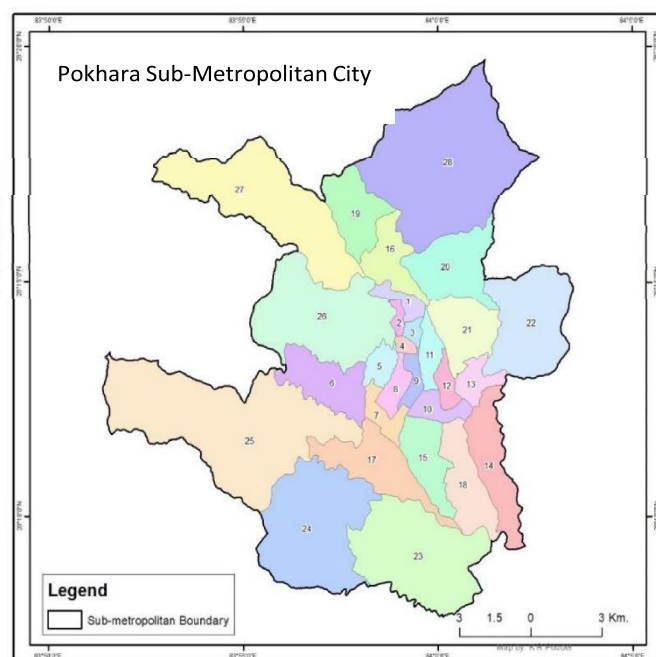


Fig. 1b

Population Growth Pattern of Urbanization in Pokhara Sub-Metropolitan City

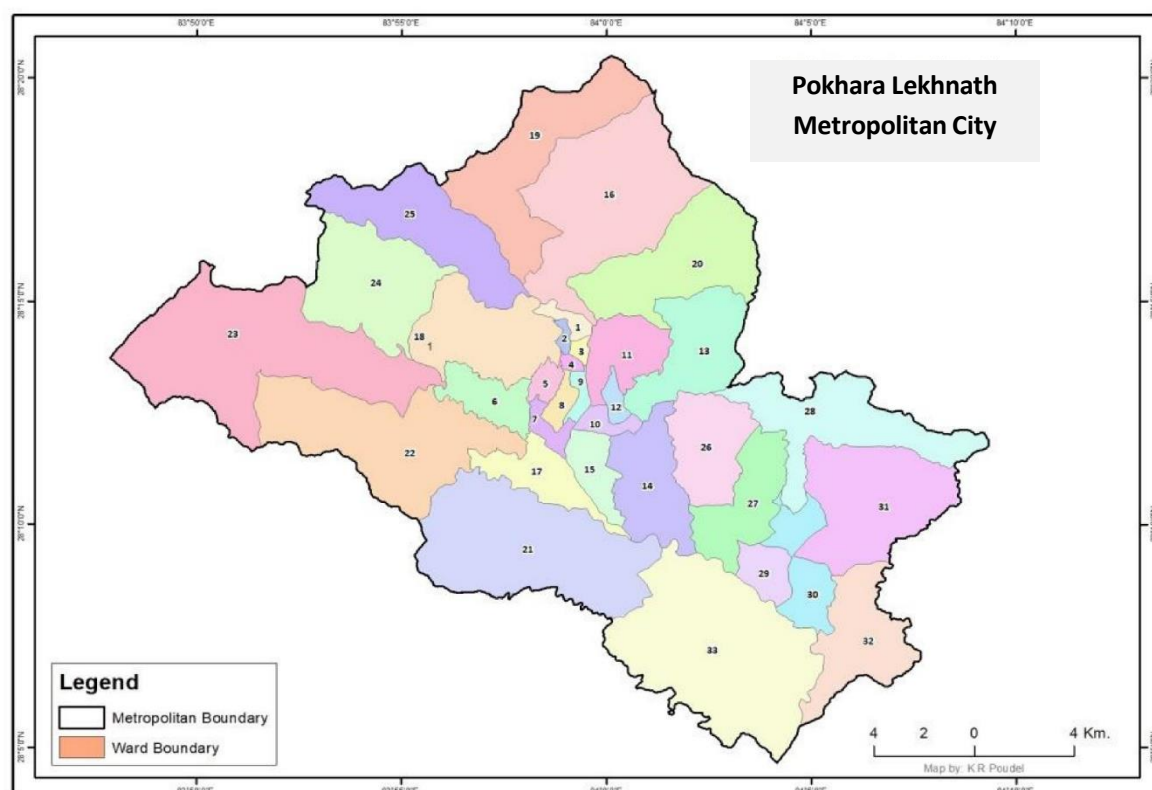


Fig. 1c

Pokhara Lekhnath Metropolitan City has practiced rapid growth especially in the last few decades, which could be due to political instability over the years, due to security reasons for better livelihood and easy life than in rural parts or other reasons people have migrated from its adjoining districts and rural towns to the city.

Table 1: Population Growth Trend of Pokhara Lekhnath Metropolitan City(1961 AD-2017AD)

Year	Population	Growth Rate
1961	5413	-
1971	20611	14.3
1981	46642	8.51
1991	95286	7.41
2001	162219	5.46
2011	255465	4.91
2017	414141	10.95

Source: Statistical Office, Kaski, 2018

The population of Pokhara in the 1991 census was 95286, according to the 2001 census, the population of Pokhara was 162219 and the population of Pokhara 255465 was recorded in the 2011 census. The average annual population growth rate of Pokhara sub-city was around 4.91%. As a result, the rate of building building of new buildings was estimated to increase from 1600 buildings a year to about 5200 buildings a year including renovation and renewal in 2021.

Households Increment Rate of Pokhara Lekhnath Metropolitan City

Total number of households in Pokhara Sub-Metropolitan City is 68236 according to census 2011. In 1961 there were 1679 households, which was increased by 28.6 percent annually and reached to 6479 households in 1971. Similarly, there were 8376 households in 1981, 20273 in 1991 and 37236 in 2001. The number of household got increases to 105844 and the annual increase rate is 9.18. In March 2017 Pokhara Sub-Metropolis and Lekhnath Municipality got merged and all together the Pokhara Lekhnath Municipality got divided into 33 districts with an area of 464 km², because of this the number of household got increased to 9.18 % (Table 2)

Table 2: Increment rate of Households of Pokhara Lekhnath Metropolitan City (1961-2017)

Year	Households	Growth Rate (Annual)
1961	1679	-
1971	6479	28.6
1981	8376	2.9
1991	20273	14.2
2001	37305	8.4
2011	68236	8.3
2017	105844	9.18

Source: CBS Office, Pokhara, 2018

Note: The Table does not include the data of Lekhnath Municipality till 2011A.D

Increment of Industrial and commercial Activities

Pokhara has about more than 100-year experience in the field of industrial and commercial activities. In the beginning, Small and cottage industries were mainly established in the old market area (Ganesh Tole, Ramkrishna Tole, Bhairab tole and Moharia Tole), but it is spread all part of the city. The pace of industrial and commercial development accelerated only after air link in 1953. Despite the break-in- bulk-point location in the Transe-Himalaya trade route, Pokhara took a first jump in

commercialization and industrialization since the establishment of Nepal Bank Limited in 1955, Nepal Rastra Bank in 1961, Agriculture Development Bank in 1967, Rastriya Banijya Bank in 1975 and Nepal Industrial Development Corporation in 1974. The second jump was the construction of Siddhartha and Prithvi Highways, which link Pokhara with Terai and Kathmandu. Establishment of Pokhara Industrial Estate' in 1975 further encouraged industrial development. Small and cottage industries were rapidly grown up with the introduction of new investment policy of financial institution, which were providing soft loans to the entrepreneurs.

In the Beginning, clothes, carpets, handicraft metal and artist products were recognized as the industrial products and commercial goods of Pokhara. Bagar and Mahendrapool emerged as trading and commercial areas by 1964 and Rambazar, Ranipauwa and Matepani by 1969. Besides these, Prithvi Chowk, Newroad and Pardi areas took the place of commercial status just after the implementation of the Pokhara Physical Development Plan, 1974. Similarly, Amarsingh Chowk, Damside and Baidam areas developed in the decade of 1990s as the centers of educational, institutional and tourism development respectively. Jams Rovert initiated tourism by focusing on enhancing trekking opportunities. It was extended even up to the Annapurna, Jomsom and Dhaulagiri regions. It was firstly started from airport area in 1980s and later extended toward Lakeside and Dameside areas. It is reported that Pokhara is a nature's gift of peace and beauty, which helped to promote commercial and industrial activities.

After the institutionalization of small and cottage industries and establishment of industrial estate, the industrial development has played an accountable role in urban growth of Pokhara Sub-Metropolis. In 1981, only four plants were in the industrial estate in 366 industrial establishments. In 1991, the numbers of industries increased by 313.2 percent and reached to 1512 industries were added in the industrial estate, too. In between 1981 and 1991, small and cottage industries were remarkably increased. It's now in 2014 reached to 7244 small and Cottage industries in the city. The number of the industries got increased after the formal merger of the two urban centers. The growth of heavy and large-scale industries such as food processing, manufacturing and textile was relatively slower. Few cottage and medium scale industries are also located in the areas of Lekhnath. Basically agro based industries are located in an around Lekhnath.

Urban Infrastructure Development Electricity

In Pokhara, Phewa Hydro-Electricity Project with 1000 KW capacity was started in 1967 by damming Phewa Lake. In 1981, national grid line project of 132 KVA with 6 MVA capacity had connected. Similarly, 132 KVA grid line with 7.5 MVA capacity had connected in 1985. The Seti Hydro-Electricity Project was started in 1985 with a capacity of 1500 KW and connected to the national grid line as per rule of the Government. Other Hydro-Electricity Projects are under construction.

According to census 2011, out of total no of households 68236 of Pokhara Sub-Metropolitan City 66949 households use the electricity for lighting i.e. 98.2 percent households use electricity for lighting and other uses. The city areas are completely electrified after 2017.

Communication

Pokhara have facilitated with different types of communication like Radio, Television, Postal service, Internet, Cell Phones etc. are the major indispensable elements of communication. 'Mohan Akashbani' centered at Mahendrapul started in 1950 in Pokhara. After the establishment of Nepal Telecommunication Corporation (NTC), the formation of Telecommunication Committee and Telecommunication Corporation Branch Office played a vital role for the rapid growth and sustainable development of telecommunication in the city. There were 8887 land line phones only in 2000 (Sapkota, 2000). Whereas, in the beginning 200 mile long telephone lines which were brought in use by 1951, which was not available to the local public (Sitaula, 1978). As per to the census of 2011, there are 17275 households which have land line phone. About 60491 households having mobile phones, 16660 households having computer and 8737 households having internet facility, 41296 households having radio and 45537 households having television. Different F.M. stations like Radio Annapurna, Machchapuchhre F.M. Himchuli F.M. Radio Barahi and so on, as well as the local television channels have played a role directly or indirectly to attract the people to the city.

Drinking Water

Drinking water supply is one of the most important factors for the attraction of migrants. Almost all part of the city is connected by government or private pipe line. Pokhara city has been experiencing piped water supply facilities since 1921. Baldhara spring was captioned and supplied firstly for the city, capacity of which was 300000 liters per day. Bhotikhola drinking water supply project 1950 capacity up to 4000000 liter per day, Kalimuda drinking water supply project 1980 capacity up to 8000000 liters per day, Mardi khola project 1988 capacity up to 12000000 liters per day later its capacity was added another 5000000 liters per day were established. There were 14802 taps that are the operation by the government and private sectors, likewise the metered or unmetered connected of tap water to households till 2000 (Sapkota, 2000), whereas there are 64232 households which are connected to pipe lines. The number of household with tap water got increased after 2017 and the number got increased to 92.59 %, the household using spout water is 2.44 %, uncovered well water user household are 1.5 % (Table 3)

Table 3: Types of Drinking Water according to Households

Types of Drinking water	Household (N=105844)	percent
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Tap/piped water	92.59
Spout water	2.44
Uncovered well/kuwa	1.35
Covered well/kuwa	0.92
River /stream	0.34
Tubewell / handpump	0.15
Others	1.81
Not Stated	0.40

Source: CBS Office, Pokhara, 2018

Road Network

The transportation development started from 1953 with the opening of air service linking with Kathmandu. Modern means of transportation came in Pokhara following the air service. Total length of matelled and unmatelled road of the city in 2000 was 223 km. After declaring Pokhara Lekhnath Metropolis on which, the three highways namely Prithvi Highway, Siddhartha Highway and Pokhara-Baglung Highway run through the middle part of the Pokhara Lekhnath Metropolitan City. All together these highways covers the length of 50 km in the city.

In recent time total length of the road is seen 618 km as extracted from Satellite image downloaded from Google Earth Pro 2013, 2016 and verified in 2017. In the period of fourteen years from 2000 to 2017 there is an increment of 88.4 percent which is shown in figure 2.

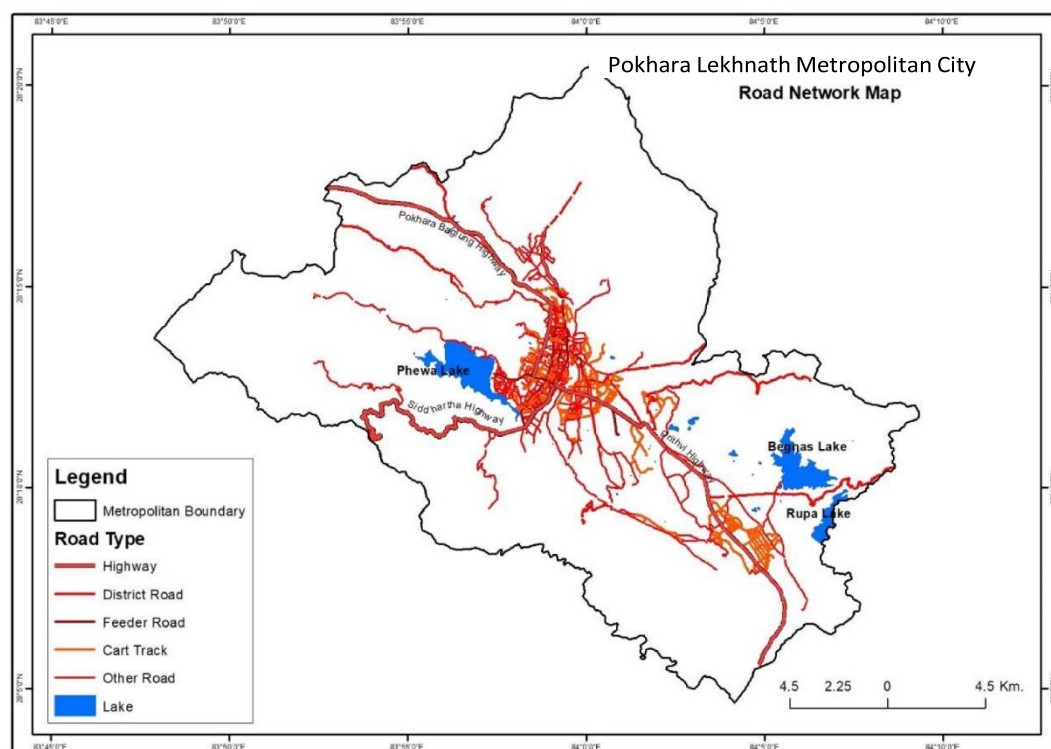


Fig. 2

Educational Institutions

The city is one of the popular educational town of Nepal, it is also known as the hub of the education of Nepal after Kathmandu (PEIP, 2000). It comprises 217 schools of different levels according to District Educational Office, Kaski. On which 47 schools are community and remaining 137 schools are private. Except these, 21 colleges such as Prithvi Narayan Campus, Janapriya Campus and the Private Campuses are also attracted the student from many districts. Similarly, 16 technical colleges affiliated to CTEVT mainly in nursing sectors are another attraction center. In 1961, there were only 15 schools in Pokhara. It was increased to 26 by 73.33 percent within 1971 and similarly shown in the table. Maximum growth rate was seen in the period 1981 to 1991. Similarly in 2017 the number of education institutions got increased in 2017 as the city was merged as a big urban center of the country. Overall literacy rate (for population aged 5 years and above) of Pokhara Sub-Metropolitan City is 84.94 percent as Census report 2011 which was 66.7 percent as census 2001. Literacy rate of Male population is 93.12 percent and literacy rate of Female population is 80.99percent (table 4).

Table 4: Educational Institutional Development of Pokhara Sub-Metropolitan City (1961-2017)

Years	No. of Educational Institutions	Net Increase	Increased Percent
1961	15	-	-
1971	26	11	73.33
1981	38	12	46.15
1991	93	55	144.74
1999	168	75	80.65
2014	217	49	29.17
2017	294	77	26.19

Source: District Educational Office, Pokhara, 2018

Note: The Table does not include the data of Lekhnath Municipality till 2014 A.D

Urban Growth Pattern Urban Growth 1978-1998

Urban area in 1978 was 96.24 Km² i.e. 17.51 percent and 25.03 Km² i.e. 45.57 percent in 1998. That means urban land is increased 160.25 percent in the period of 1978 to 1998. Figure 3 shows that there was rapid urban growth during this period.

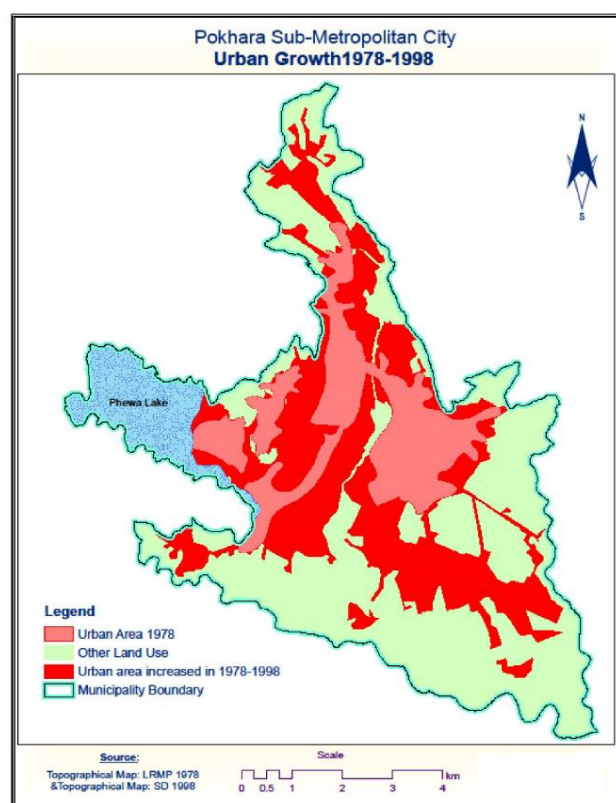


Fig.3. Source: Topographical map Published by LRMP 1978 and Topographical map published by Survey Department of Nepal

Urban Growth 1998-2014

Urban area is increased from 25.03 km² to 36.44 km² i.e. increment percent is 45.54 in the year of 2014. It is due to the expansion of ward territory (Fig 5). There is a vast differences noted during this period, it is due to the extension of ward area of Pokhara Sub Metropolitan City.

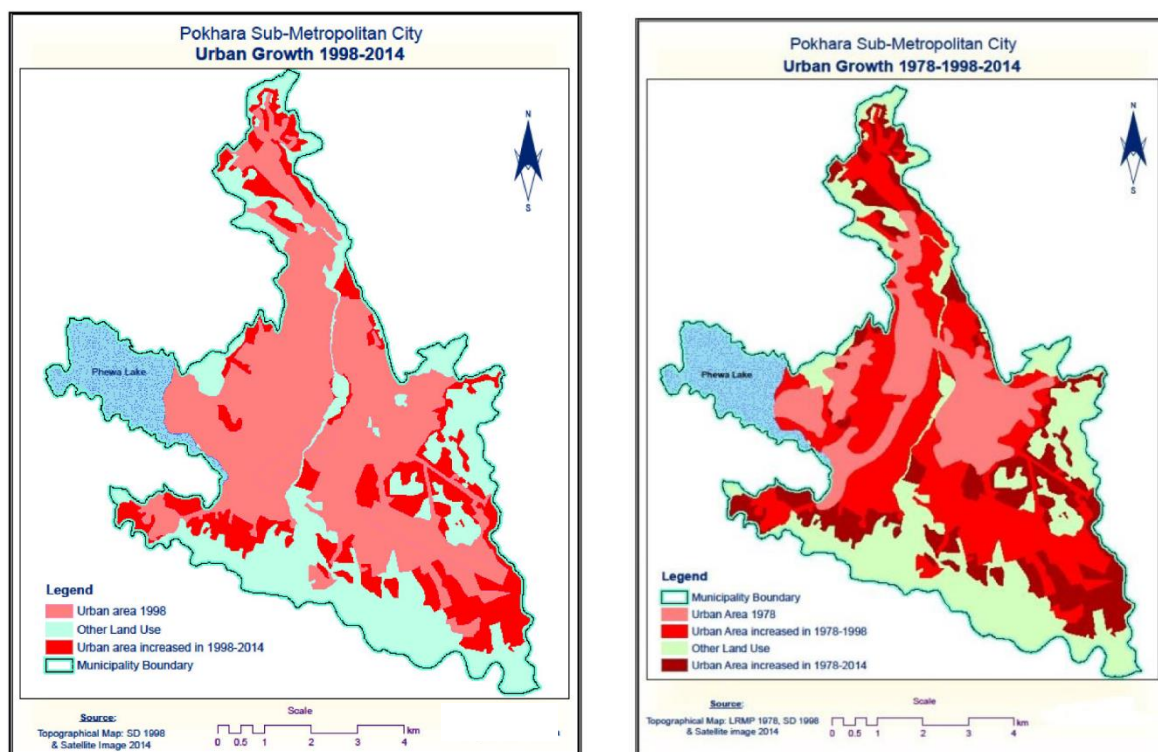


Fig. 5

Source: Topographical Map published by Survey Department of Nepal and Satellite Image downloaded from Google Earth Pro

Urban Growth 1978-2017

The urban area, 9.62 Km² of 1978 is increased to 36.44 Km² in 2014 i.e. 278.77 percent increment is there, it is also due to the expansion of area of the wards of Pokhara and after the declaration of Pokhara Lekhnath Metropolis (figure 6). After the declaration of Metropolitan city the area under Lekhnath Municipality also got merged with Pokhara 2017 and the total area under urban region is 69.19 sq. Km.

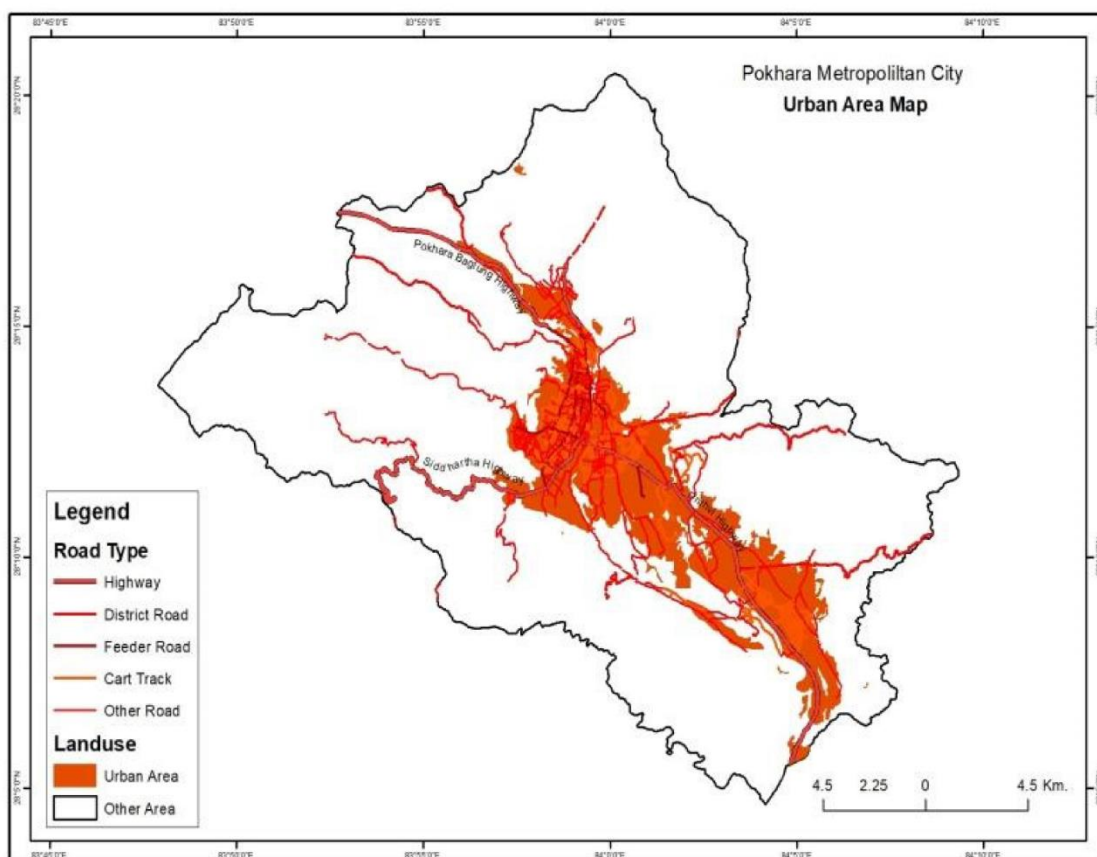


Fig. 6 Pokhara Lekhnath Metropolitan City

Source: Topographical map published by LRMP and Satellite image downloaded from Google Earth Pro.

Conclusion

From the above study it can be concluded that there is a rapid growth in the city and fringe areas in Pokhara Lekhnath Metropolitan City. The city's rural convenience is highly responsible for the development of the city. In the last two decades in Pokhara, the population has increased by 41.62 times (1952/54/2017). Land use in the city experienced a rapid land use change as the exchange of urban growth began 30 years ago. Pokhara, a rapidly growing city in western part of Nepal, is currently going through a landmark land cover change through change of agricultural land into a private and marketable area. Migration is a very compound phenomenon and a huge problem for Pokhara Lekhnath Metropolitan City and its local authorities. Due to rapid afforestation, immense progress has been made in land use and land cover, which has also led to imbalances in the biological and social environment.

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