

URBAN MORPHOLOGY AND DEMOGRAPHIC CHARACTERISTICS OF KOTA CITY, RAJASTHAN

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Abstract: This paper presents urban morphology of Kota city of Rajasthan, which is famously known as education hub of India. The elements of urban ecology are studies under physical elements and social elements which comprises of residential colonies, transportation lines, educational institutions, entertainment and recreation, marketing zone, industrial units, cultural groups, economic classes, workmen and urban workers. All these elements had shaped the current urban space of the city. Based on the historical context and current needs, urban land use of Kota has been defined. The study has been conducted by visual survey analysis. Lastly relationship between demography and morphology of Kota has been analyzed and comparative study of demographic profile has been done.

Index terms: Urban morphology, Physical elements, Social elements, Demography, Visual survey analysis.

I. INTRODUCTION

Urban morphology is a field that studies the physical form of cities in space and time by focusing on the configuration of urban elements such as plots, streets and buildings and other build up area. Reflecting city history and envisaging city plan and mapping morphology is important for understanding cities.

Urban evolution of Kota city is of interlinked phenomena which has changed over the time. These changes can be seen by changes in demography of the city. The built-up area has also changed as per the requirements of the present needs. Kota city has undergone major transformation with respect to its urban morphology. In the post-modern discourse understanding Kota city morphological patterns is important for establishing the essence and identity of the city due to which Kota city transformed itself into education hub of the country.

Urban morphology consists of urban elements like buildings and streets through which city planning can be done. All the urban elements have interconnected role in defining paths, edges, nodes, landmarks and district as apart of urban area.

Urban morphology can be studied with help of remote sensing. Recent advances in Earth Observation Technology had significantly improved ground level observation, to have synoptic view of the city. Urbanization process can be examined with the help of remote sensing imagery data.

Kota city has been listed under smart city mission of India.

II. STUDY AREA

Kota city is headquarter of Kota district. As per historical records Jait Singh founded Kota by attacking Bhils of Koteah clan. historical footprints make Kota city culturally diverse. It is located in the south – east of Rajasthan. Geographical coordinates of the city is at latitude of 25°12'49.74"N and a longitude of 75°51'53.11"E.

The city is drained by river Chambal. Climatic conditions in Kota city is moderate type.

The geological profile of the city makes it rich in mineral resources. Based on stratigraphic succession the rocks found in city are:

Table 1: Geology of Kota

Recent	Alluvium soil,
Recent to sub recent	Kankar
Upper Cretaceous to	Laterites, Bauxite
Lower Eocene	Deccan trap
Paleozoic	
(a) Upper Vindhyan	
(b) Lower Vindhyan	

	Bhandar series, rewa series, kaimur series Samuri series
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Source: Department of Mines and Geology, Rajasthan

Knowing geology of a city becomes very important for understanding the built-up area of the city. The economy of the city is mainly derived out of chemical and fertilizer industries, along with naturally occurring Kota stone and other minerals. In the recent times Kota has emerged as education hub which is highly contributing in the economy.

Fig 1: Geographical extent of Kota city



Source: Google Earth

III. URBAN ECOLOGY OF KOTA

Study of urban ecology has been done by taking physical elements and social elements of the city which are defined as:

Physical elements:

1. Residential Colonies

Fig 2: Areal view of Talwandi



All the major residential colonies like vigyan nagar, talwandi, R.K. puram, shrinaathpuram, loco colony etc has been developed along the transportation lines which encircles the major landmarks like educational institutions, railway station, thermal power plant.

The built-up structure of residential buildings is two storied buildings, apart from this apartment culture with multi story buildings has been introduced in the city lately with increase in migratory population in search of better opportunities. Also, with improvement of lifestyle many gated societies have been emerged away from the city center.

Fig 3: Residential houses, Dadabari



2. Transportation lines

National highway 76 which is part of east west corridor of India and national highway 12 passes through the city which is very important for the connectivity of the city, apart from this Delhi-Mumbai express way has been proposed which will be passing through Kota.

Local road network has been developed which consists of state highways and district roads with connects to the city center. These transportation line has facilitated development of settlement along the routes. Eg., development of borkeda suburb of Kota is along the national highway 76.

Fig 4: All the major roads converging at city Center

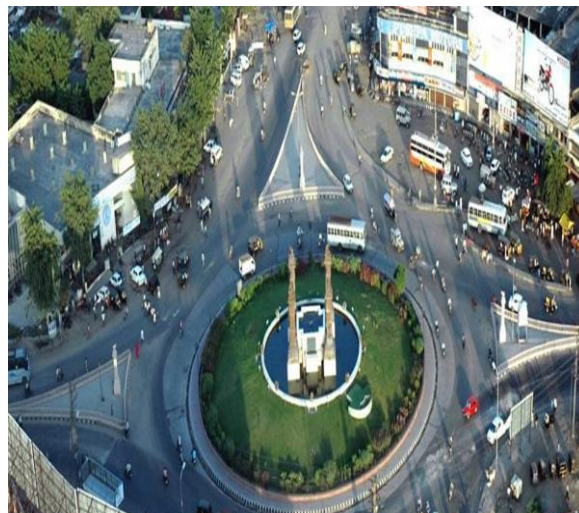
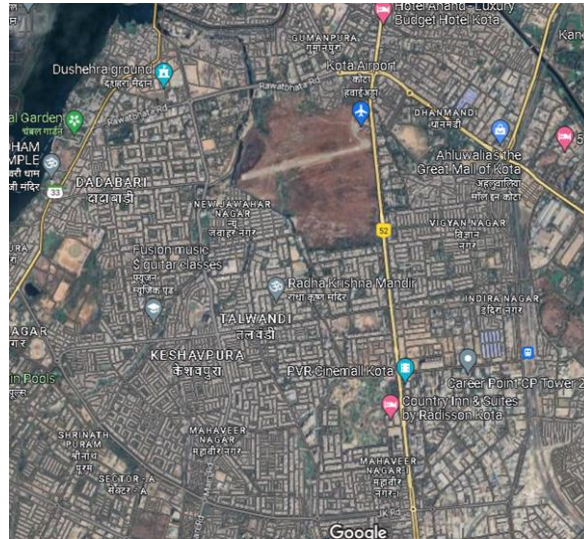


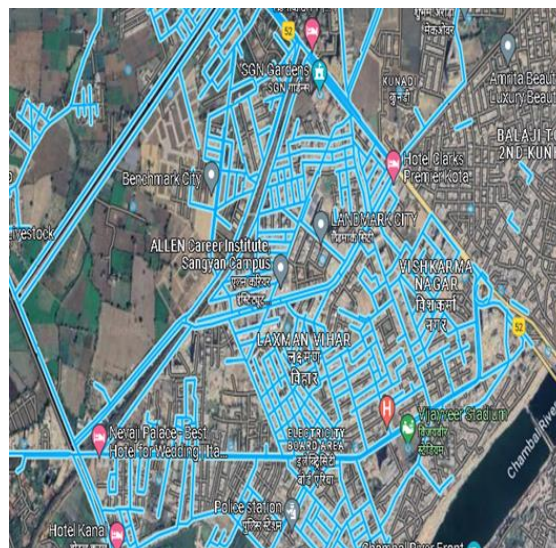
Fig 5: Radiating circular pattern around the city center



3. Educational institutions

Kota city comprises of various educational institution varying from schools to colleges both in public and private sphere. Schools are spread all around the city whereas the universities such as technical university of Kota, University of Kota, Open university of Kota etc are located away from the city center because they developed at very later stage. Kota is known for its medical and engineering entrance exam preparation which has amalgamated various private coaching institutes like Resonance, Allen career institute, Motion, Akash, Unacademy. It is not wrong to say that urban morphology has transformed due to these institution. This has led to development of new residential areas away from the city center i.e., Landmark city. Mini markets have been formed around the coaching institution. Hotels have emerged.

Fig 6: Landmark city around Allen career institute



4. Entertainment and recreation

Emerging urban landscape has welcomed modern entertainment sources like cinema hall, gaming zone, box cricket etc. in the city. Whereas city also offers historical monuments to visit like garh palace, Garadia Mahadev temple, museums. Newley constructed seven wonders park, city parks offer entertainment and recreational zones of the city. To maintain the environmental approach green space has been conserved and named as C.V. Garden.

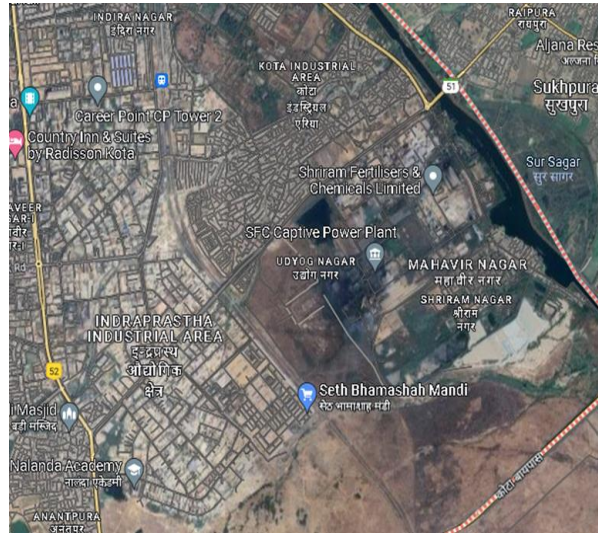
5. Marketing zones

Major markets are located around the city center i.e., new cloth market, Indira market, automobile market, vegetable market (dhanmandi), furniture market etc.

6. Industrial units

Heavy industrial units are located away from the city center as they require large land and also cause pollution. E.g., Industrial area of Kota, RICCO, chemical fertilizer industries. Light manufacturing industries such as jewelry and utensils are located close to city center.

Fig 7: Udyog Nagar, Kota



Social elements

1. Cultural groups

Kota city is largest urban center in south-east Rajasthan. Kota city has strong pull factors like good educational facilities, health infrastructure, employment opportunities etc. attract population from rural area surrounding the city, apart from this being the educational hub it attracts students from all over India for medical and engineering entrance exam. Because of migration various cultures can be witnessed in the city. Mainly city is dominated by Rajasthani culture of Hadoti plateau.

2. Economic classes

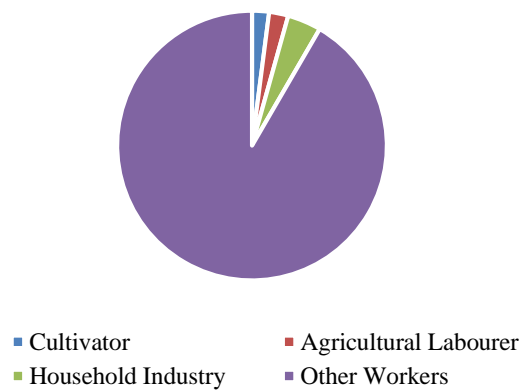
Economic classes of can be classified as rural middle class, public sector middle class, urban private middle class, trader middle class, rising middle class, upper class based on financial aspects. These economic classes are segregated on the basis of their residential zones in the city.

3. Workman and urban worker working in various economic sectors:

Bases on the census of India economic activities has been classified under four categories i.e., cultivators, agricultural labourers, household industry, other workers. In Kota lowest proportion of workers are from agricultural activities because city is dominated by urban act ivies like service sector, tertiary activities etc.

Fig 8: Workers in Economic activities, Kota city

Category of Workers in Economic Activities



Source: Census of India, 2011

IV. URBAN LAND USE OF KOTA CITY

Urban land use consists of place of economic activities and its level of spatial accumulation, which indicates its density, intensity and concentration of various activities such as retailing, manufacturing, residence etc. urban landscape is shaped due to human interaction with various economic activities based on the price and convenience city landscape is transformed.

Table 2: Urban land use, Kota city

Residential classes	Marketing	Industrial	Institutions	Hypermarkets
Upper	Retail	Light manufacturing	Health Education Recreation	MNCs
Middle	Wholesale	Heavy Manufacturing		Costly items
Lower				

V. DEMOGRAPHY AND URBAN MORPHOLOGY OF KOTA

Demographic structure and trends intertwine with economic, social and political factors creates a dynamic context for functioning of cities, town etc. with the passing years urbanization is growing at a very faster rate which is resulting in urban sprawl. Kota has also developed urban agglomeration which consists of Kota city, Kaithoon and nearby big villages has been transformed into small towns.

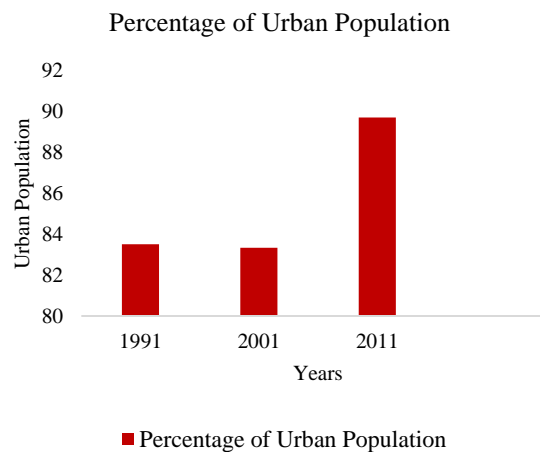
Table 3: Demographic profile of Kota city

Attributes	2001	2011
Total Population	694316	1001694
Scheduled Caste Population	107038 (15.4%)	182807 (18.25%)
Scheduled Tribe Population	27357 (3.9%)	48810 (4.87%)
Sex Ratio	884	895
Sex Ratio (0-6 age group)	899	885
Literacy Rate	80.5	82.80
Gap in male-female literacy rate	17.9	14.16
Main workers (%)	25.3	29.42
Marginal workers (%)	3.35	3.1
Non workers (%)	71.5	67.23

% of slum population to total population	23.8	15.87
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Source: Census of India

Fig 9: Urbanization, Kota



Source: Census of India

Analyzing city-level demographic trends is important for projecting needs of the city in terms of the infrastructure and development. The data shows that there is influx of population urban areas. Based on demography, identity of people and their perceived image about city shapes the morphology of urban landscape.

CONCLUSION

Studying urban landscape is important for managing changes and to conserve them. Geographical boundaries of the city get greater emphasis on by planning authorities, ironically these city boundaries are studied inadequately which leads to many urban problems. In recent years Kota city has shown peripheral growth in the suburbs. Urban areas are worst affected by climate change and its impact, climate change can have potentially irreversible threats to human society and environment. Constantly growing built-up area in Kota city has increased the energy demand, it is resulting in heating of the city.

In line with smart city mission and AMRUT initiative of government, Kota city can be transformed into sustainable city.

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