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Application of Urban Landuse Models to Aurangabad City

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Introduction:

Land is the most important natural resource for man. The survival of man depends on land upon which the entire fabric of human settlements including shelter, infrastructure and services are built. The land constitutes the fundamental base not only for settlement but also for various human activities such as agriculture, industrial, commercial and transportation. Thus, this limited non-renewable resource used by man for various purposes. Therefore, landuse is an important aspect of various branches of geography including urban geography. Various urban landuse theories and models have been put forth by scientists to analyzing internal structure of the city and variations in landuse.

The term 'landuse' can be defined as "actual use of any parcel of land" Sauer (1919) defined landuse as "The use to which the entire land surface is put." Use of land by man has been changed from place to place and time to time. With the human progress and increase in population, the use of land for many purposes also changed. There is a great difference between landuse in rural areas and urban areas. In rural areas, land is used predominantly for agricultural and other primary activities, while in urban areas the nature of landuse is multipurpose and more dynamic. Therefore, there has been a notable increase of interest in the urban land and its use in recent years. The growth of urbanization leads to the expansion of urban limits and more intensive use of urban land with growing competition for its different uses. With the march of urbanization and industrialization, land ones devoted to agriculture, pasture and forest enters the market for houses, factories, offices, stores, recreation, transportation and other requirements. As urban growth proceeds, the conversion of land from agriculture to urban use increases. The developments over peripheral land in urban land areas are responsible for population shifts and landuse changes.

Because of lack of employment and amenities in rural areas, people migrate from the rural areas to the city for employment in the industries, several service sectors and also for business or trade and commerce. It leads to expansion of urban limits and change in urban landuse.

Due to urbanization, the movement to the periphery gets momentum, particularly by the demands of families who prefer to live with open space which can only be built on a relatively cheaper land on the out skirts of the cites (Wishwakrma, 1998). The process further gets momentum due to sky rocketing in urban land and property values. Faced with a situation in which land priced out of ones reach "The poor encroach and the middle class resort to unauthorized colonies." (NCU, 1985). This is true to almost all urban centres of reasonable size in India.

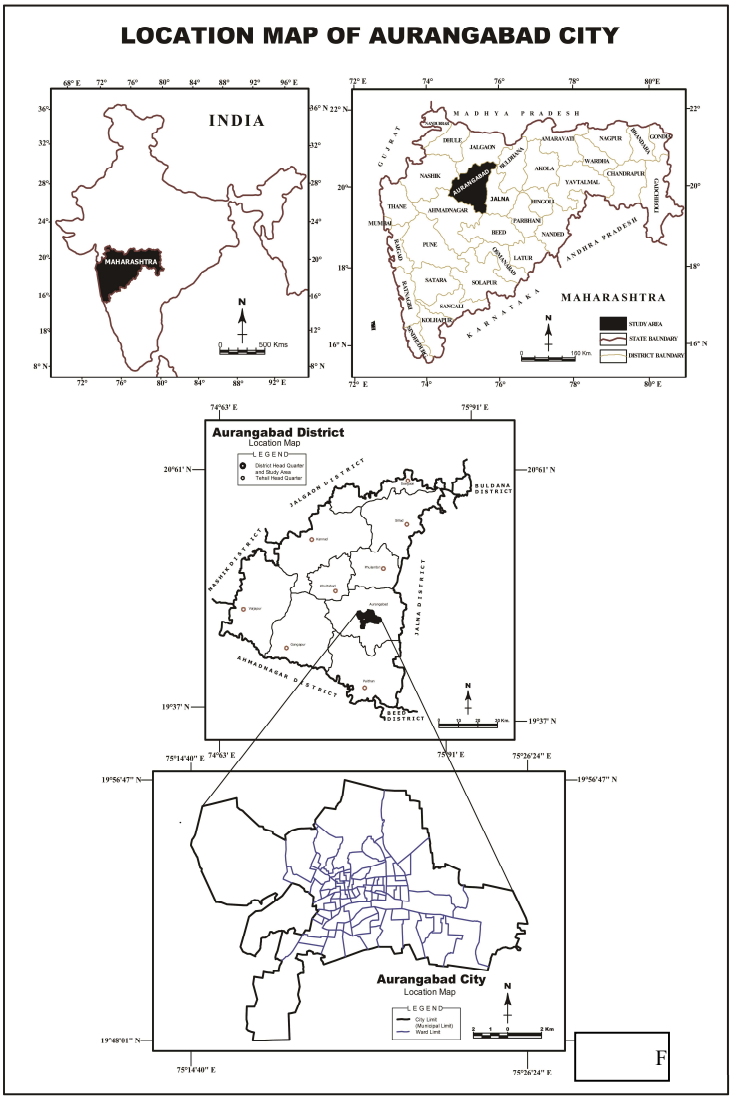
Study Area:

For the present study Aurangabad city has been selected as a study region. The selection of study region is not arbitrary. In recent decades, the city witnessed rapid growth of population. In the city, landuse is changing rapidly and land values also increasing at fast rate. It can be considered as a representative of million cities of the nation.

Aurangabad is the largest urban centre of Marathwada region of Maharashtra state. It is headquarter of Aurangabad district and divisional headquarter of Marathwada region. It is an ancient and historical city of the Marathwada Region. Now days it is an important industrial centre and tourist place of the state. It is also recognised as million plus city. In population it ranks 38th in the country. According to 2011 Census, the population of the city is 11,75,116 persons with the density of about 8,485 persons per sq.km.

Aurangabad sits in a strategic position on the Maharashtra Plateau. The city is situated at the foot hills of Ajanta. It is surrounded by many hillocks. It is located on the bank of River Kham, a tributary of Dudhana which meet to Godavari. The average elevation of Aurangabad city is 555.04 metres above the mean sea level. Total area occupied by corporation limits of Aurangabad city is about 138.5 sq. km. The city area lies between 19° 48' 1"N to 19° 56' 47"N latitude and 75° 14' 40"E to 75° 26' 24"E longitude (Figure 1).

The Aurangabad Municipal Council was formed in 1936. In the year 1971 the geographical area of the town was 64.41 sq. km. On 3rd December 1982 the council was converted into a Municipal Corporation and 18 nearby villages were included in the city and area of the city extended up to 138.5 sq. km. Aurangabad was Asia's one of the fastest growing city during the decade of 80s and 90s due to development of industrial area.



The city has many attractions such as Bibi Ka Makbara, The Panchakki, Soneri Mahal, etc. Aurangabad is also a centre of education in Marathwada region. Marathwada

University was established in Aurangabad in 1958. Many educational institutions have come up in the neighborhood of university. This has caused the development of the new housing societies.

Aurangabad is well connected with Mumbai, the state capital, Delhi, the national capital and other important places by air, rail and road. The city is located on Hyderabad – Manmad - Mumbai railway line. After to conversion of meter gauge into broad gauge railway line, the city is well linked with the major cities in India.

Aims and Objectives:

The main aim of the present study is to know the appropriate urban landuse model for the Aurangabad city. To achieve this aim, the following specific objectives are kept in mind:

i) To know the geographical setting of the study region.
ii) To know the appropriate urban landuse model for the Aurangabad city.

Database and Research Methodology:

A] Literature Survey:

The available literature on the topic of research has been scanned from various libraries, research institutes, journals and internet.

B] Data Collection:

Both, primary and secondary data are used for the present research work. Base map of the city and other primary maps showing wards were obtained from the Survey of India, Municipal Corporation and Town Planning office. Geographical, historical and socio-economic information about the city have been collected from government and non-government published literature. Data regarding industries are obtained from the office of the Executive Engineer, MIDC, Aurangabad.

C] Data Analysis:

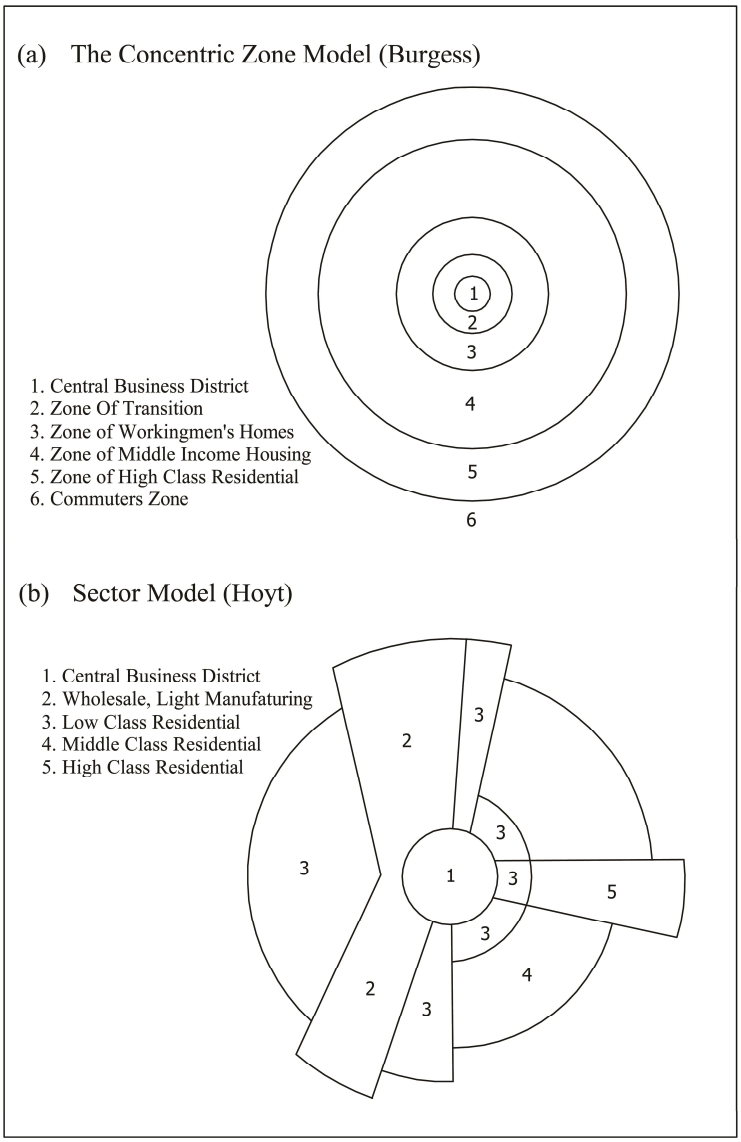
The data collected from primary and secondary sources are processed by adopting appropriate methods and statistical techniques to investigate various aspects. The details regarding the various scientific methods and techniques have been discussed in the text at appropriate place.

The obtained results are given in the form of tables and maps. Appropriate cartographic techniques are employed to support the analysis. The brief account of analysis of data regarding landuse and land values is mentioned below.

Discussion:

First of all Burgess put forth a concentric landuse zone model in 1925. He assumed that there is a close relationship between land rent and accessibility within the city. He expected that the areas which are more accessible will have higher land values and competition in landuse. The type of use which gives maximum profit will occupy the land which is most easily accessible, generally the city centre. He has postulated six different zones away from the city centre. Those are: (i) Central business district or C.B.D. (ii) Zone in transition, (iii) Zone of working men's houses (iv) Zone of middle income housing (v) High class residential, and (vi) Commuters zone (Refer Fig 1.6a). This model is based on the study of American town in general and Chicago in particular.

Landuse Models



Only to some extent this model is applicable to Aurangabad city. The city possesses C.B.D. zone. But, other zones do not match to the extent desire. It is very difficult to demarcate uni-functional zones. In many areas large numbers of uses are intermixed. For example, high income group residents like Pushnagari, Aurangpura, Konkanwadi, Panchavati, Bansilal Nagar and Usmanpura are developed between the belt extending from three to five kilometer distance away from city centre in south and southeast direction. However, it is not a continuous concentric belt. It is interrupted by middle class residential areas, slums, administrative sector, etc.

The model put forth by Homer Hoyt consisted of sectors. He emphasized that direction and distance from arteries of transportation are more important than the distance from city centre. He further stated that landuse zones get elongated along the arteries of transportation leading to emergence of sectors instead of circles. He has identified five different landuses developed in the form of sectors. They are (i) C.B.D., (ii) Wholesaling and light manufacturing, (iii) Low class residential, (iv) Middle class residential, and (v) High class residential (Refer Fig. 1.6b).

However, in case of Aurangabad city it is difficult to identify different sectors in different directions away from the centre. The landuse in the city is intermixed. To some extent there is a segregation of landuse in the form of very small pockets.

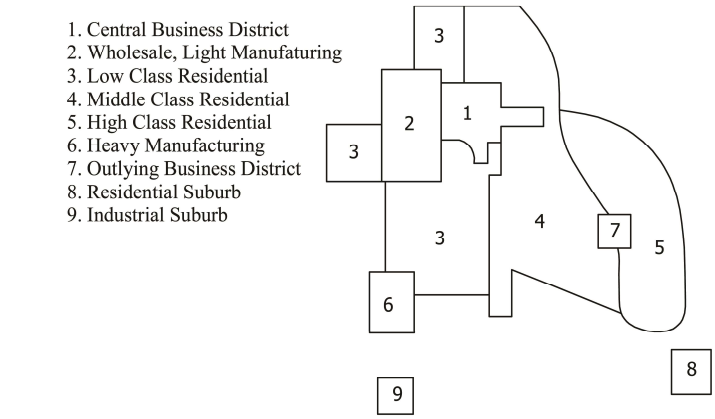
Multiple nuclei model was put forth by Ullman and Harris (1945). They argued that in the historical process of growth, separate areas emerge, neither zones nor sectors. It is in the form of patch work. They have identified nine different landuses. They are (i) C.B.D. (ii) Wholesaling and light manufacturing, (iii) Low class residential, (iv) Middle class residential, (v) High class residential, (vi) Heavy manufacturing, (vii) Outlying business district, (viii) Residential suburb, and (ix) Industrial suburb. This model is also not much applicable to the Aurangabad. (Refer Fig. 1.6c)

Thus, it is very difficult to apply above mentioned models to Indian cities in general and Aurangabad in particular.

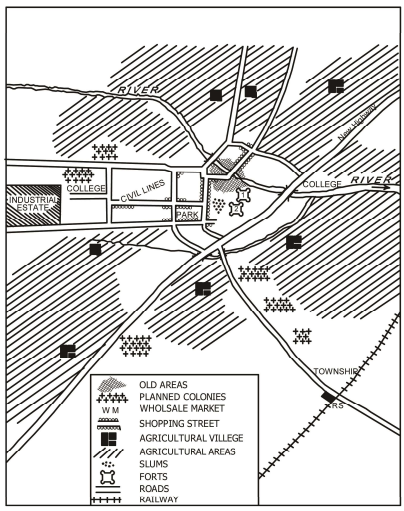
Smailes (1969) has developed a model for Indian cities, dealing with the internal city structure. This model is relatively more appropriate. He has discussed how settlements evolved over a period of time and changes the nature of functions and characteristics during different power. Broadly he has classified the city under different phases of development. They are (i) Initial Indigenous town/settlement, (ii) City under the influence of Muslim rule, (iii) City under the influence of British rule, (iv) Post independence Period.

Landuse Models

(c) Multiple Nuclie Model (Harris and Ullman)



(d) Indian City Model (Smailes)



His model is based on different observations made for different Indian cities. He identified different zones such as (i) Old walled city, (ii) Extension zone, (iii) Main bazar street and chowk, (iv) wholesale market, (v) Industrial estate and factory area, (vi) village nucleus, and (vii) Basti or slum.

When the development and internal structure of Aurangabad city compared with Smailes model it is noticed that the city by and large confirms to Smailes model of Indian city.

The town evolved over a period of time. It was subjected to various socio-economic forces during different periods of evolution such as Hindu, Muslim, British and post-independence period. Aurangabad city was rapidly grown, particularly during the Muslim period. Aurangabad initially was a small town located on the bank of River Kham founded by Malik Ambar in 1610. Aurangzeb built the wall round the city in 1682 and considered as first stage of development. When Aurangzeb made Aurangabad his capital, there were 54 suburbs which were walled in like the city itself. In 19th century, due to increasing population Begampura and Aurangpura were developed for the town expansion which can be considered as a second stage of development. The old Aurangabad localities are surrounded by fortress walls with 52 Gates. The establishment of cantonment board in 1890 could be considered as a third stage of development.

From the 2nd century B.C. it is one of the important commercial and trade centre on ancient trade routes from Ujjain to Pratishthana (Paithan), capital of Satvahana (DDPR, 2015). In 19th century, it also emerged as a military centre. The metre gauge railway line was constructed by Nizams with the help of British power. It gave further impetus to the fourth stage development of the city.

Before and after independence, the city also emerged as a industrial centre. After the 1960, Aurangabad is become the divisional headquarter of Marathwada Region and all the administrative functions of the region started here. Due to development in different fields, the Aurangabad city is become multifunctional in nature. The population of this city is rapidly growing and now it is recognized as 'Million City'.

Application of Smailes Indian City Model:

If the internal structure of Aurangabad city is compared with Indian city model put forth by Smailes some of the common characteristics can be identified. The model incorporates old city with protected wall. The same situation is observed in case of Aurangabad city. Here, the Begumpura area consists of protected wall.

The industrial estate or factory area is shown by Smailes in his model near or adjoining railway line but well within the outer residential colonies. The same situation is observed in Aurangabad city. The industrial location is near railway line and along the Jalna Road away from old residential colonies.

The Smailes model shows that the railway line goes through city from the few distance of city centre. The similar situation is noticed in Aurangabad city. In this model the old city and main bazar are located close to the river bank. In case of Aurangabad also the old Aurangabad and central business district is almost close to river bank.

Smailes model shows the fort is located near river as well as close to old city. At Aurangabad also the fort is located on the bank of River Kham, a tributary of 'Godavari' and in the vicinity of old Aurangabad settlement.

According to this model the slum locations are close to fort, river or railway line. In Aurangabad also most of the slums are located close to fort, river and railway line.

Conclusion:

Study reveals that layout of Aurangabad city represents traditional city as well as newly developed planed city after independence. Thus, Smailes Indian City Model is more applicable to the Aurangabad city.

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