INTRODUCTION

The concentration of population engaged in secondary sector of an economy in an urban place is termed as urban locality. The definition of urban locality was introduced in India in 1961 Census for the first time. This definition was followed in 1971, 1981, 1991 and 2001 Census and classified the following types of localities as urban.

a) As all places with a municipal area/ corporation, cantonment or notified area committee.

b) All places which satisfy the following criteria.

i) A minimum population of 5000

ii) At least 75% of the working population belongs to non agricultural activities.

iii) The density of population is at least 400 persons / sq. km

iv) The place should have the pronounced urban characteristics and amenities like newly founded industrial areas, large housing settlements or places of tourist importance.

Concentration of population at a place refers to urbanization. It may be defined in the crude form as the proportions of population residing in an urban center are engaged in secondary sector of economy. Northam (1975) stated that urbanization is an accelerated form of urban growth. It increases the proportion of urban population to that of total population at a faster rate. Urbanization is a process that involves the multiplication of points of population concentration as well as increase in the size of individual urban concentration. The expansion of size of an urban center depends either on the natural increase on the population or on immigration of population from rural to urban or from urban to urban centers. The
rural urban migration is the moving force behind the progress of urbanization and is
the main push factor for growth of an urban area.

The demand for labour by developing economic activity in the urban center
acts as a pull factor for growth of urban population. The migrants can get an
employment in activities with a very low productivity or swell the rank of
unemployment. High rate of movement indicates rapid growth of investment either in
an economy as a whole or in industrial sector.

In the initial stage urbanization is characterized by traditional economic
structure and society and relatively small share of population residing in urban
centers. In the second stage of urbanization is a steep increase in the urban population,
concentrating on economic activities. The secondary and tertiary sectors have
increased to employ large number of migrants. The third stage is a terminal stage
which comes after acceleration stage. Urban population reaches near saturation point.

There are three concepts of urbanization in the social sciences viz., i) the behavioral ii)
the structural and iii) the demography.

The first one is concerned with the behavioral patterns of individuals over
time, the second one is related to changes in the economic structure and the third one
is related to population concentration.

Urbanization as a process of population concentration which occurs by
increase in the number of urban centers of concentration or agglomeration. Amitab
Kundu (2009) over viewed the urbanization migration process in Asian countries at
macro level since nineteen fifties. He concluded that changing structure of urban
population across different size categories revealed a shift of urban growth from large
order cities to second order cities and stagnation of small towns. The overall view of trend and pattern suggest that the phase of urbanization would be high, but much below level projected by UNDP.

The study of urban spatial structure deals with diversified phenomena such as places of residence, commercial establishment, road network, public & semi public offices, industrial units, parks, grave yards, religious places and ethnic groups.

In the olden days majority of the towns have developed along coastal regions and major river courses. In the uplands the growth of urban areas has taken place at major junction points. The rapid increase in population and aerial expansion of urban centers has depleted the surrounding agricultural lands. There is a steep increase in the land values. Urban land use data is needed in the analysis of urban environmental problems. A systematic study is needed in updating the land use and land cover maps. The major aim of land use classification system is to provide framework as broad as possible and would cover all the possible types of land use within the urban area that could be mapped within the certain area. The land use classification should be compatible with the existing system. The rapid increase in population, road network, drainage and industrialization has led to unplanned growth of urban centers with deteriorating environmental conditions. This unabated trend led to increase pressure on urban land and therefore, the urban areas desire to plan for future town developments and its peripheral areas. Of late aerial photographs on large scale and Remote sensing data are used to prepare urban land use maps. The introduction of Geographical Information System (GIS) has resorted to solve many urban problems and for future planning and development.
The rapid migration of people from rural to urban areas in search of employment has paved way for the development of urban slums along the major arterial roads, railway lines, filled in tanks and Government lands. The growth of urban slums is creating problems of urban planners and urban administrators for improving the living conditions. The development of commercial shops along the major roads in the urban centers could not pave way for delimitation of Central Business District (CBD).

Micro-climatic changes are noticed in the urban centers due to congested housing with reinforced concrete roofs, air pollution due to release of automobile exhaust along major congested roads, air and water pollution due to discharge of industrial effluents and radiation effects due to laying of concrete roads and structures.

The availability of water has become a major problem in urban centers due to over extraction of available ground water resources and low recharge. The per capita availability of water could not be full filled due to limited water resources in the under ground. The over extraction has led to steep fall in ground water levels and majority of the deep bore wells have dried up. The geo-hydrological conditions are altered. There is no proper planning for the development of green belts in the urban areas. Due to changing urban land uses, growing population, air, water and noise pollution, and radiations, micro-climatic changes in urban areas are taking place. In addition to this the people living in urban places are affected by a number of health hazards. The air borne and water borne diseases are rapidly increasing among all age groups of urban dwellers. Keeping the above criteria in mind the researchers has made an attempt to
study the urban morphology, land use changes, urban problems and health hazards of Hindupur Municipality.

STUDY AREA

Hindupur Municipality covers an area of about 3816 hectares (Fig 1.1). As per 2001 Census Hindupur Municipality had a population of 1,25,074. The males constitute of 51% of population and female constitutes 49% of population. The average literacy rate is 62%, which is higher than the national average of 59.5%. The male literacy rate is 69% and female literacy rate is 55%. Hindupur is constituted as Grade – III Municipality in 1920. It has been upgraded as Grade – II Municipality in 1952, and Grade – I Municipality in 1970, Hindupur has been upgraded to special grade municipality by merger of six panchayats in 1989.

The municipality is located at 13°50' N latitude and 77°30' E longitude at an altitude of 624 meters above mean sea level on the broad gauge section of South Western Railway connecting Bangalore and Hyderabad.

The municipality receives an average rainfall of about 583 millimeters. The mean maximum temperature of about 42 °C is recorded in the month of May and the mean minimum temperature of about 15 °C is recorded in the month of December and January. The Hindupur Municipality experiences dry sub humid type of climate. The people in the municipality are comprised 67% of Hindus, 29% of Muslims and 4% of Christians and others. Out of the total population 8.82% are Schedule Caste, 0.57% are Schedule Tribes. The sex ratio in this municipality is 1000:949. There are about 42 notified urban slums. The total notified urban slum population is 42,024 constituting 34% of the total population as per the 2001 Census. Many poor people located in the surrounding Hindupur Municipality have migrated to this municipality.
LOCATION MAP OF HINDUPUR MUNICIPALITY

Fig 1.1
in the search of lively hood and contributed to the emergence of large number of urban slums without any basic civic amenities and services like shelter, drainage, water supply, health, education and lively hood. There are about 30 revenue wards in Hindupur Municipality (Fig 1.2).

OBJECTIVES

The main objectives of the study are

▸ To study the growth of population, ward wise distribution of population, population density and occupational structure

▸ To bring out the morphological growth of Hindupur Municipality from its inception

▸ To study the land use and land use changes of Hindupur Municipality over a periods of nine decades from 1921 to 2009.

▸ To study the existing major urban infrastructural facilities of Hindupur Municipality.

▸ To study the major urban environmental problems, micro climatic variations and urban health hazards of Hindupur Municipality

▸ To propose the future land uses of the Hindupur Municipality for the sustainable land use planning and development

SOURCE OF DATA

The data pertaining to morphological growth of Hindupur Municipality has been collected from historical records of the Hindupur Municipal Office. The population growth from 1901 to 2001 over a period of 100 years has been collected from Census of India. The ward wise distribution of population from 1961 onwards and ward wise occupational structure of Hindupur Municipality has been collected
from Hindupur Municipal Office. The data on land use over a period of nine decades from 1921 to 2009 has also been collected from Hindupur Municipal Office. The data pertaining to temperature, rainfall, humidity and direction of wind of Hindupur Municipality on monthly basis over a period of 50 years has been collected from Indian Meteorological Department. The major problems relating to urban housing, urban sewage, solid waste disposal, congested roads, urban slums and pollutions has been collected through primary data collection ward wise from Hindupur Municipality. The data pertaining to selected diseases has been collected from Government Hospitals and Private Hospitals located in the Hindupur Municipality. It is aided with primary data collection at ward level.

METHODOLOGY

Simple statistical techniques like density of population, index of concentration, relative increase or decrease in land use changes and morphological growth of the Hindupur Municipality are adopted to study the growth of population, distribution and density of population and changes in land use.

Field studies are carried out to identify the delineated land use features interpreted from satellite data of IRS-1B Geo coded data and LISS-III data. The topographic maps, satellite images, and maps downloaded from Google earth web site are used as base maps. The modern techniques like Micro station, Auto CAD and GIS are used to generate various topographic and feature maps of the Hindupur Municipality.

The data pertaining to mean monthly rainfall, temperature and humidity has been collected from Indian Meteorological Department to study the micro climatic variations if any in the Hindupur Municipality over a period of 50 years. The water
balance technique adopted by Thomthwaite and Mather (1955) is used to study the water balance of the Hindupur Municipality based on mean monthly rainfall and mean monthly temperature.

The primary data is collected at ward level to study the major urban problems of the Hindupur Municipality from about 1% of the total population. The random sampling is adopted to gather primary data. Similarly the data pertaining to selected diseases of the Hindupur Municipality has been gathered from the Government and Private Hospitals located in the Hindupur Municipality and through primary data collection.

The environmental problems of Hindupur Municipality was studied from data collected on existing housing demand and deficit, water supply demand and deficit, sewage disposal, solid waste disposal, urban transportation, urban congestion and urban pollution (air, water and noise).

The data pertaining to urban slums, their distribution, population, occupation, income, health, nutrition and occurrence of diseases was collected ward wise through questionnaire from about 1% of the total slum population. The quality of life and environmental impact assessment of Hindupur Municipality is carried out ward wise taking the occurrence of environmental problems and ecologically deteriorated zones adopting Smith (1973) method.

REVIEW OF LITERATURE

The term urban is defined differently in different parts of the world. In Canada a settlement with a more than 1000 persons is called as urban settlement. Urban area is basically a greater concentration of population having marketing, manufacturing,
service and healthcare facilities with three fourth of population engaged in non agricultural activities. In Spain a settlement with above 2500 population is considered as urban settlement. In Netherlands urban area is defined as all municipalities with at least 5000 inhabitants and more than 50% of the population is engaged in non agricultural activities. In United Kingdom a settlement is designated as urban on the basis of local Government. In United States places having 2500 or more inhabitants are classified as urban places. In Australia a settlement with one 1000 or more inhabitants is considered as urban area. In Greece urban areas includes municipalities and communes with 10,000 or more inhabitants. In Japan urban municipalities have a population of 30,000 or more. In Pakistan all areas having town committees are treated as urban.

The definition of urban area or town has been defined in India by Census in 1911 following the given criteria.

1. Every municipality.

2. All civil lines not included within municipal limit.

3. Every cantonment

4. Every other continuous collection of inhabitants by not less than 5000 persons.

In 1941 the Census of India has defined urban area has a place of not less than 5000 inhabitants possessing definite urban characteristics. In 1961 the Census of India has defined urban area as a municipality or an under town committee or a notified authority or cantonment board with density of not less than 386 persons/sq.km and with a population of 5000 and more and three fourth of the working population are engaged in occupation out side the agriculture. This definition was also followed during the 2001 Census.
The term urban agglomeration was chosen by Census of India in 1971 and defined as a city with continuous out growth. The Census of India also introduced the projected growth area of a town or city as it would be after 20 years. The subsequent Censuses of 1981, 1991 and 2001 have retained the same criteria for urban agglomeration.

Urbanization is a process by which the proportion of the population of the country living in the urban places increases and is associated with shift in employment from primary sector to secondary, tertiary and quaternary sectors. It is a process of urban concentration. Mayer (1960) described that urban geography is concerned with interpreting the patterns and relations that exist within urban areas. Singh (1965) described that the study of urban centers and their land use is of paramount importance to urban geographers. Gosal (1972) explained urban geography in the geographic study of urban places which evolve and grow as service centers. Urban growth is an indicator of change in occupation, socio-economic value system, way of life and degree of socio-economic awakening (Chandan & Sindhu 1980). Mahadev (1986) has treated urban geography as an inter disciplinary subject. Urban geography is concerned with the growth and characteristics of cities. According to Mulik (1989) urban growth is the important indicator of development of the country and its region. Pathan et al., (1989) have mapped the urban land use of Bombay metropolitan region using Remote sensing data. Pathan et al., (1991-a and 1991-b) have studied the urban land use studies of Calcutta Metropolitan Development Authority area and Ahmadabad Urban Development Authority area using Remote sensing data respectively. Hemamalini (1995) has discussed the human induced micro climatic variations in the urban environs of the Visakapatnam city. Barnes Kent et al., (2001) described the patterns, consequences and measurement of urban sprawl.


Due to rapid urbanization and industrialization a number of urban environmental problems have emerged. Among them are air pollution, water pollution, noise pollution sewage problem, solid waste disposal, water problem, traffic problems and development of urban slums. Anstead (1928) has studied the sewage problem of Madras city, Singh (1966) has made a geographic analysis of slums of Kanpur city, Singh (1971-72) has studied the impact of air pollution of Ranchi city. The urban slums of Baroda city was studied by Khatu (1975). The environmental pathology and diseases of Bhopal town were studied by Chaubey (1975). The slums of Nagpur city are described by Jain (1978). Kayasta (1979) described the urban slums of Kanpur city, Kayasta and Kumara (1979) have studied the problems and

ORGANIZATION OF THESIS

The present study has been divided into nine chapters.

The First chapter gives the introduction of study, study area, objectives, sources of data, methodology and review of literature and organization of thesis.
The second chapter contains the demographic structure and dynamics of population which shows ward wise distribution of population, population density and occupational structure.

The third chapter focuses on morphological structure and various stages of development of Hindupur Municipality.

The fourth chapter deals with a detailed account of urban land use and land use changes over a period of time and delimitation of Central Business District.

The fifth chapter describes the existing infrastructural facilities of the Hindupur Municipality.

The sixth chapter contains the urban environmental problems and micro-climatic variations of the Hindupur Municipality.

The seventh chapter gives information of the spatial distribution of selected diseases of Hindupur Municipality.

In the eight chapter the proposed land use development of Hindupur Municipality is discussed.

The summary and conclusion are given in the ninth chapter.