
Abstract

The thesis includes the findings and results of Urban Sprawl and Utility services, carried out in the Pune and Pimpri-Chinchavad, Pune district in Maharashtra.

Pune and Pimpri-Chinchwad area lies between 18° 25’ to 18° 42’ North latitude and 73° 42’ to 73° 57’ East longitude. The study area covers 414.90 sq. km. Pune (PMC) area covers 243.31 sq. km. composed of 144 general electoral wards according to 2007 which comes under 14 administrative wards of Pune Municipal Corporation. The city is located in saucer shaped basin at an average altitude of 560 m. above mean sea level. The area surrounded by offshoots of Sahyadri hills and extends from west to east. Pune is slightly hollow on the banks of Mula and Mutha Rivers on Deccan plateau.

Urban sprawl is defined as the scattering of new development on isolated tracts, separated from other areas by vacant land ((cf), Shekhar, 2005). This result in increase in the built-up area and related changes in the urban landuse patterns, causing loss of productive agricultural lands, forest cover, other forms of greenery, loss in surface water bodies, depletion in ground water aquifers and increasing levels of air and water pollution; causing environmental problems. The process of urbanization is affected by population growth and migration. Infrastructure initiatives result in the growth of villages into towns, towns into cities and cities into metros involving large scale migration from rural to urban area. Sprawl is considered to be an unplanned outgrowth of urban centers along the periphery of cities, along highways and along the roads connecting to a city (Sudhira, et.al, 2003).

The PCMC (Pimpri - Chinchawad Municipal Corporation) 94.4 % recorded the highest growth of population according to 2001 Census in Maharashtra, which is the part of Pune Metropolitan region. This is mainly due to the rapid growth in the Information Technology sectoral region. Between 1991 and 2001, the growth has doubled to 62.17 % in Comparison; Pune district has a growth rate of 38.58 %, while the state is experiencing the growth rate of 22.5%. Therefore it is necessary to add the past and present growth trends of these rapidly growing cities, for effective urban management (S. Shekhar, 2005).
For healthy and happy living provision of adequate amenities, facilities and public utility services are essential as they enhance efficiency and economic utilization and time. In order to prepare development plan for utility planning of a city, there is a need of good and reliable information regarding location of existing facilities, their accessibility, adequacy and development trends in relation to socio-economic structure of the city.

Pimpri-Chinchwad (PCMC) area covers 171.59 sq. km composed of 105 general electoral wards according to 1997 which comes under 4 administrative wards of Pimpri-Chinchwad Municipal Corporation. The PCMC is situated in to the Northwest of Pune on the Mumbai-Pune National Highway at an average altitude of 530 to 566 m. above mean sea level. The east-west ridge running midway between Indrayani and Pavana rivers separate this area into two parts. The northern portion gradually slopes towards Indrayani river while the southern portion gradually slopes towards Pavana river.

The precise aim of this present study is to find out urban sprawl in Pune city and suggest planning to provide utility services. In order to serve this aim, following objectives have been put forth.

- to study existing landuse/landcover using satellite imagery in Pune – Pimpri-Chinchwad
- to identify various utility services of Pune – Pimpri-Chinchwad area.
- to implement the Utility and Planning for future urban sprawl in terms of services

In order to understand Urban Sprawl of Pune and Pimpri-Chinchwad, the methodology adopted for the present study was divided into following phases.

1. **Library work:** Exhaustive literature survey of the topic of investigation was undertaken. Published Literature, Reports were collected from various libraries, institutes; Govt. departments etc. Besides, using relevant literatures had also reference books, Bulletins, Review etc. were studied procure on internet.

2. **Prefield phase:** Includes collection of different maps, Satellite imageries (LANDSAT EMT+ and IRS P6 LISS III data were used to map the extent of sprawl for 1980 to 2008), topographical maps. Collection of non-spatial data, utility services data details were obtained from PMC and PCMC.

3. **Field work:** This phase includes visit to the study area and its fringe areas in different seasons, GPS surveys, instrumental surveys, photographs, surveys etc. were
carried out in the sprawl. It facilitated to understand the complexities of a dynamic phenomenon such as urban sprawl, land use changes, urban sprawl pattern.

4. Laboratory work: Includes the digitization of various layers, preparation of maps and other GIS/RS techniques.

   i.e, Georeferencing, Digitization, Attribution, Data attachment, Overlay analysis, Superwised and Unsuperwised classification, Final layouts of different maps were analyzed.

5. Synthesis of the data, Report writing and submission: The data generated during the field, and laboratory studies was synthesized, interpreted and are incorporated in this thesis.

The Approach:

By adopting the above methodology and with defined objectives the entire work has spread over six chapters. The contents of all six chapters are briefly presented below.

First chapter deals with the introduction to the topic, basic concept of Urban Sprawl, its definition and relation with utility services. Occurrence of Sprawl in general and occurrence of sprawl in Pune and Pimpri-Chinchwad have been also discussed briefly. A major component of this chapter is devoted to the introduction of the study area, criterions for the selection of the study area, aims and objectives and the literature Survey. Literature survey and part of this chapter deals with the urbanization, urban planning, urban transport and utility services. Review of modern techniques and methodology adopted for the study is also discussed in detail.

Second chapter comprises the profile of the study area that gives a detailed account of location, extent and aerial coverage of the Pune and Pimpri-Chinchwad in the Pune District, (Maharashtra, India). Physiography and climate of the Pune and Pimpri-Chinchwad. Built-up, landuse, transportation, communication and population characteristics of the Pune and Pimpri-Chinchwad are also discussed in the last part of the chapter to know about socio-economic status of the Pune and Pimpri-Chinchwad.

Third chapter contains database and methodological approach for the monitoring and measurement of sprawl in study area. Methods are given in the beginning of the chapter.
Fourth Chapter under the title ‘An assessment of urban sprawl’ the LANDSAT ETM+ and IRS P6 LISS III satellite data were used for the monitoring and measuring the sprawl of Pune and Pimpri-Chinchwad over different periods of time from 1980 to 1992, 1992 to 1999, 1999 to 2004 and 2004 to 2008.

Fifth Chapter focuses on the utility services like transportation, hospitals and educational facilities in Pune and Pimpri-Chinchwad area.

Chapter six gives the summary, results and conclusions drawn from the study. It also focuses on the significance of urban studies in unplanned cities. The concluding remarks of the study can be certainly taken into consideration while implementing urban planning, transport planning, utility services planning at Pune and Pimpri-Chinchwad area.