CHAPTER 4

STUDY AREA

4.1 URBANISATION OF MADURAI CITY

4.1.1 Definition

Urbanization is the physical growth of urban areas as a result of rural migration and even suburban concentration into cities, particularly the largest ones. The United Nations projected that half of the world's population would live in urban areas at the end of 2008. Urbanization is closely linked to modernisation, industrialisation, and the sociological process of rationalization. Urbanization can describe a specific condition at a set time, i.e. the proportion of total population or area in cities or towns, or the term can describe the increase of this proportion over the time. So, the term urbanization can represent the level of urban relative to overall population, or the rate at which the urban proportion is increasing.

Urbanization is not merely a modern phenomenon, but a rapid and historic transformation of human social roots on a global scale, whereby, predominantly, village culture is being rapidly replaced by predominantly urban culture. The last major change in settlement patterns was the accumulation of hunter-gatherers into villages many thousand years ago. Village culture is characterized by common bloodlines, intimate relationships, and communal behavior, whereas, urban culture is characterised by distant bloodlines, unfamiliar relations, and competitive behavior. This unprecedented movement of people is forecast to continue and intensify in the
next few decades, mushrooming cities to sizes incomprehensible only a century ago. Indeed, today, in Asia the urban agglomerations of Dhaka, Karachi, Mumbai, Delhi, Manila, Seoul, and Beijing are already home to over 20 million people, while the Pearl River Delta, Shanghai-Suzhou and Tokyo are forecast to approach or exceed 40 million people each within the coming decade. Outside Asia, Mexico City, Sao Paulo, New York City, Lagos and Cairo are fast approaching or home to over 20 million people already.

4.1.2 History

Madurai is known as the "Athens of the East". The main kingdoms which ruled Madurai during various times are the Pandyas and the Nayaks. It is nicknamed "Thoonga Nagaram", roughly translated as, "city that never sleeps". It is also called as temple city.

Madurai has rich cultural heritage. The city of Madurai serves as the district headquarters. It houses the world famous Sri Meenakshi Sundareswarar temple and is situated on the banks of river Vaigai. Thiruparankundram is one of the major tourist places in the district. Kazimar Periya Pallivasal and Madurai Maqbara in Kazimar Street are the oldest and major Islamic symbols in the city.

4.1.3 Topography

Madurai City is situated in South Central Part of Tamilnadu on 9°55’ in the North latitude and 78°07’ in the East longitude at a distance of 500 km from Chennai. The city has grown on both sides of the river Vaigai and lies at low altitude being only of about 100 metres above the mean sea level. The ground rises away from the city on all sides except the South, the gently sloping beautiful terrain. There are no hills as such within Madurai
City corporation limit, but, in the neighbourhood the small but prominent hills viz Anaimalai, Nagamalai, Pasumalai, and Sikandar malai are located. The city is linked by NH.7, NH.49, the railway, and airway to other major cities of the state and the nation. The location map and Geomorphology of Madurai Metropolitan Region are shown Appendix 1 in Figure A 1.1 and Figure A 1.2, respectively (Project report, Madurai Corporation, 2000).

There are seven taluks in Madurai district as shown in Figure 4.1. Tirumangalam taluk is the biggest taluk in area and highest revenue collecting taluk in the Madurai district.

1. Madurai North
2. Madurai South
3. Melur
4. Peraiyur
5. Thirumangalam
6. Usilampatti
7. Vadipatti

Figure 4.1 Map Showing Taluks of Madurai District
4.1.4 Climate

Madurai is known for its hot climate. The season for the city and environs can be divided as

i. The dry season (January to March)
ii. The hot season (April to May)
iii. The South - West monsoon period (June to September)
iv. The North - East monsoon period (October to December).

The dry season is generally hot with little relief due to the gentle showers in the month of February and March. After summer, the monsoon season starts with the usual rainfall during the months from June to September. About one-fourth of the total rain for the year is registered during this period. October and November which are usually the wettest months in the year and about half of the proportion of the rain is registered during the North East monsoon in the city.

4.1.5 Rainfall

The city records 85 cm of rainfall in a year. When the monsoon breaks usually after July, average annual rainfall reaches above 10 cms. Showers are intermittent and usually heavy during the North East monsoon. The rainfall and water table of Madurai Metropolitan region is shown in Appendix 1 - Figure A 1.3, A 1.4.

4.1.6 Temperature

The mean of maximum and minimum temperatures of the city are 41.6\(^{0}\)C and 20.9\(^{0}\) C respectively. In the hottest months from April to June, the temperature does occasionally shoot up beyond 40\(^{0}\)C.
4.1.7 Wind

In the months of January and February wind blows steadily between the North and Eastern directions. From May to July, the direction is from South to West.

4.1.8 Soil

The major groups of soil that are found in Madurai and its environs are the black and red variety. Karisal, Chevval, and Vandal are the important varieties of soils found in the surrounding area of the city. Geology, Soil and Soil suitability of Madurai Metropolitan Region are shown in Appendix 1 - Figure A 1.5, A 1.6, and A 1.7.

4.1.9 Comparative study of the growth of population

The comparative study of the growth of population (Master Plan-Madurai LPA, 1992, 2011) for the period 1901-2001 reveals that the population of India and Tamilnadu has increased four times and three times respectively. Whereas, the population of Madurai city has multiplied nearly nine times during the same period. The share of Tamilnadu to the population of India is gradually decreased from 8.10% in 1901 to 6.05% in 2001, whereas, the share of Madurai city Municipal Corporation to Tamilnadu increased gradually from 0.57% in 1901 to 1.48% in 2001.

The comparative study of rate of growth of population of the Madurai urban agglomeration to the total urban population of the state and in class-I cities of the state for the year 1911, 1941, 1971, 1981, 1991 and 2001 reveals that the share of the population in the Madurai urban agglomeration is high both in relation to the state’s total population and its urban population. The percentage has fallen from 15.05% in 1911 to 6.89% in 2001. This
indicates there is a wider range of urbanization in Tamilnadu. Madurai is the third largest city in Tamilnadu with the population of 9, 22, 913 (Municipal corporation) as per the 2001 censes. In 1991-2001 the decrease of population is due to the spread of urbanization.

Table A 2.1 shows the urban population of the city and its growth in Local Planning Area from 1951 to 2001. The area and population of Madurai LPA consists about 80% area under rural settlement and about 20% in urban (Table A.2.2). The population of Madurai city municipal corporation has increased from 1901 to 1991 except for 1991-2001, where there was a decrease in population (-1.92%) is observed as shown in Table A 2.3. The city municipal corporation is getting diverted towards urban sprawl to avoid congestion. The negative variation in the population of Madurai city during 1991 to 2001 indicates that the land use area of Madurai city is getting expanded. Table A 2.4 indicates that the migration of rural population towards urban expanded areas are higher since Madurai district urban decennial population variation in percentage is +19.59 in comparison with Madurai city (-1.92%) and Tamilnadu urban population (+42.79%) during 1991 to 2001. Table A 2.5 shows the population of six municipal corporations of Tamilnadu from 1901 to 2001. Table A 2.6 indicates that the Madurai municipal corporation stands in the 3rd rank in population growth rate from 1991 to 2001 compared to other other Tamilnadu municipal corporations. Table A 2.7 shows the urban settlement of Madurai LPA, Tirumanagalam Municipal and eight town panchayats during 1991 to 2001. Tirumangalam municipality has a significant increase in population whereas, Madurai corporation has a decrease in population which shows that the settlement increase is rapid in Tirumangalam. Table A 2.8 indicates that the projected population of Madurai LPA for the years 2011, 2021, and 2031 shows that Tirumanagalam taluk rural settlement covers and will cover a maximum area.
4.1.10 Urban Structure

Madurai city has developed in a linear fashion along Alagarkoil Road, Samayanallur Road, Thirupparankundram Road towards Tirumangalam. The city has extended up to Vilangudi Village in the North West, Thiruppalai Village in North, Kathakinar Village in the North East, Melamadai village in the East. In the South, the city has developed along Aruppukkottai road up to Villapuram of Avaniyapuram Town Panchayat. In the West, the city has developed along Theni Road up to Erkudi Village. The land use distribution for Madurai city for the years 1969 and 1989 are shown in Figure A 1.8 and A 1.9. The results of the figures show that there has been a tremendous variation in land use distribution. The urban expansion during the years 1969, 1989, and 1997 is shown in Figure A 1.10. The results from the map indicate that the expansion has taken place in all directions of Madurai city. The land use conversion is explained based on the agricultural land use change of the year 1969, 1989, and 1997 in Figure A 1.11. The agricultural productivity of the years 1969, 1989, and 1997 are also shown in Figure A 1.12, A 1.13, and A 1.14. Based on the comparison of the three maps, loss in agricultural productivity from 1969 to 1989 and from 1989 to 1997 is shown in Figure A 1.15.

The Government of Tamilnadu has notified a Local Planning Area for Madurai, stretching to an extent of 720.97 Sq.km. under Tamilnadu Town and Country Planning Act, 1971. This area includes Madurai city Municipal Corporation, Tirumangalam Municipality, 8 Town Panchayats, and 179 Villages. The total population of the area is 14, 36, 169 as per 1991 census and 15, 24, 027 as per 2001 census. Land use pattern of the year 2001 for Madurai LPA (Table A 2.9), Land use pattern of Madurai city municipal corporation (Table A 2.10), and Land use pattern of Madurai urban settlement
(Table A 2.11) indicate that the township development directed towards Tirumangalam takes place at a faster rate.

4.1.11 Problems of the city

As far as, the Master Plan Report for Madurai Local Planning Area 2011 is concerned, the following are the highlights of the problems of the city.

1. Increasing haphazard and sub standard developments in the Madurai Master Plan Area and consequent unbalanced growth of the city.

2. Acute shortage of housing resulting in overcrowding and congestion in the city.

3. High intensity of residential concentrations within the four veli streets i.e. in the old city. Slum and bad housing areas along the railway lines. The banks of the Vaigai river are misused. The slums and bad housing along the sides of the river.

4. The highly congested central area of the city, the multi various economic activities, and mixed transport modes and road users.

5. Absence of organized commercial areas and shopping centres with sufficient parking and godown facilities.

6. Installing industries in the usually crowded old cities constitutes a source of nuisance and this position is being aggravated by in adequate and narrow circulation of roads and ill designed junctions and crossings.
7. Arterial roads with inadequate lanes and ribbon development along the corridor are the sources of obstruction to the free traffic flow.

8. Inadequate core services of water supply, drainage facilities and congested traffic and transportation facilities.

4.2 STUDY AREA – TIRUMANGALAM TALUK

4.2.1 Topography

The latitude and longitude extension of the Tirumangalam Taluk (Study area) is 9°37’32.89” N to 9°57’55.95” N and 77°48’ 55.17” E to 78°57’ 18.52” E respectively, and its altitude range from 52 to 353m above mean sea level (Figure 4.2).
4.2.2 Importance of the Study Area

The Tirumangalam taluk consisting of two blocks viz. Tirumangalam and Kallikudi, is situated on the banks of the river Gundar, which is a distributary of river Vaigai. People from southern part of Tamilnadu pass through the town and hence the town is called a junction city. Tirumangalam taluk has Tamilnadu’s second largest SIDCO at Kappalur. Various industries like Parle’s biscuit factory, Metal powder industries, Tyres and Tubes production units, Small Spinning Mills, Powerloom Units, Garment factories, and Automobile dealers are also established in the
Kappalur area. RayalaSeema's Railway concrete sleeper producing factory is situated at Tirumanagalam. Mepco's Metal powder and Tamil Nadu government’s Aluminium powder producing factory are in the taluk which produce metal powder for the usage of Crackers to distribute throughout the world. The government’s sole Homeopathy Medical College and the first samathuvapuram (For those who are under poverty line) of the state are located in this taluk. The temple city Madurai is the cause of the town’s development. The SIDCO industrial estate located in kappalur plays an important role.

4.2.3 Demography

The population of Tirumangalam block from 1981 to 2001 increased from 99,087 to 1,28,379. The population of Kallikudi block from 1981 to 2001 increased from 59,994 to 68,263. An increase of about 30% and 13.8% are observed in Tirumangalam block and Kallikudi block respectively in a span of twenty years (Figure A 3.1, A 3.2). The sexwise population is also shown in Figure A 3.3, A.3.4).

4.2.4 Climate

The climate is dry and hot, with considerable rains during October - December.

4.2.5 Rainfall

The average annual rainfall is about 85 cm. The rainfall data of Tirumangalam and Kallikudi blocks for the year 2010-11 and 2011-12 are shown in Figure A 3.5, A 3.6, A 3.7, and A 3.8.
4.2.6 Temperature

Temperatures during summer reach a maximum of 40° C and a minimum of 26.3° C. In winter, temperatures range between 29.6° C and 18° C.

4.2.7 Soil

The black and red loamy-soil of Tirumangalam block is suitable for groundnut, coconut, paddy. They are the major crops cultivation of this block.

The predominant soil at Kallikudi block is black. paddy, Corn, and cotton are the major crops of this block. The mixed crop system is followed in this block.

4.2.8 Land Utilisation

The land utilization of Tirumangalam and Kallikudi blocks for the year 2010-11 and 2011-12 are shown in Figure A 3.9, A 3.10, A 3.11, and A 3.12. The comparative agricultural area has decreased and the fallow area has increased significantly over the previous period.