1. The population of Hindupur Municipality during 1901 was 7486. It grew to 24,438 in 1951 and 1,25,074 in 2001. The growth of population from 1901 to 2001 was 1,17,588. The volume of increase is 1570%. The decadal growth varied from 15.89% in 1911 to a maximum of 87.20% in 1991. The decadal growth of population from 1921 to 1981 varied from 24% to 34%. However during 1991 to 2001 the decadal growth was 19.51%. Between 1981 and 1991 the growth was maximum due to merging of six major panchayats in northern, western and southern sides. The concentration of population is high in ward number 5 in all decades. The density of population is high in ward number 11 from 1961 to 2001. The density of population varied from 322 in 1961 to 616 in 2001 in ward number 11. The maximum number of house-holds of 4,015 is noticed in ward number 5. The maximum density of house-holds of 130 per hectare is found in ward number 11. The high concentration of total workers is found in ward number 5. The maximum number of cultivators is found in ward number 28. The agriculture labours are found high in northern and southern wards of the Hindupur Municipality. The maximum house-hold workers of 2474 are found in ward number 27.

The distribution of other workers is found high in ward number 5. The marginal workers are found high in ward numbers 5 and 27. The maximum of 13655 of non workers are found in ward number 5. From the analysis of occupational structure it is found that the total workers, other workers and non workers are found high in ward number five. The cultivators are found high in ward number 28, agricultural laborers in ward number 29, house-hold industrial workers and marginal workers are found high in ward number 27. The reason for high number of
agricultural laborer and cultivators in ward numbers 28 and 29 are due to availability of agriculture land in these wards for cultivation purposes. The house-hold industrial workers and marginal workers are found high in ward number 27, due to location of a number of hand looms and power looms of silk industry. The weaver community is dominant in this ward. The other workers and non workers are found high in ward numbers 5 and 26 due to location of more number of urban slums and Muslim community.

2. The morphological growth of Hindupur Municipality shows an increase in area from 27 hectares in 1911 to 3816 hectares in 2009. The increase is about 3789 hectares. The volume of increase is 14033%. The increase in area is found 141.33 times. The increase in population from 1901 to 2001 is only 16.70 times. Hindupur was constituted as grade-III municipality in 1920. It was upgraded to grade-II municipality in 1952. Hindupur Municipality was upgraded as grade-I municipality in 1970 and in 1989 it was upgraded as special grade municipality. The urban sprawl of Hindupur Municipality is towards north-south direction. Five stages of growth of Hindupur Municipality is noticed. During the first stage the growth was concentrated in the central zone covering ward numbers 6, 7, 8, 10, 11, 15 and 16. In the second stage the expansion was towards southern and western side. In the third stage the growth was towards northern side. During the fourth stage the Hindupur Municipality was expanded towards eastern and western side. In the fifth stage the growth has taken place towards eastern side. Presently growth of Hindupur Municipality is taking place along the arterial roads leading to Anantapur, Bangalore, Parigi and Lepakshi roads.
3. From the analysis of different land use categories of Hindupur Municipality it is found that there is an overall increase in areal extent of different land use categories from 1921 to 2009. The maximum relative increase of 32,720% is found in agriculture and vacant land followed by 31,900% of water bodies, 29,000% of transport and communications, 9900% of industrial area, 9800% of commercial area, 3900% of recreational area, 3314% of residential area and 2300% of public and semi-public offices. The central business area is linear in shape and it is concentrated along main bazaar, old bus stand, old market, new bus stand, Bangalore road, Lepakshi road and Parigi road and cover parts of ward numbers of 1, 2, 3, 6, 7, 8, 9, 10, 11, 15 and 16.

4. From the analysis of educational institutions, it is found that the institutions increased from 23 in 1981 to 76 in 2009. The total increase in number of educational institutions is 53. The volume of increase is 230%. The students enrollment has increased from 7,680 in 1981 to 30,022 in 2009. The total increase in students strength from 1981 to 2000 is 22,342. The volume of increase is 290.91%. The study reveals that there is a good progress in increase in number of institutions and students enrollment from 1981 to 2009.

The analysis of health care facility from 1981 to 2009, an increase in health care centers from four in 1981 to fourteen in 2009. The increase is ten health care centers. The volume of increase is 250%. The increase in number of doctors is twelve in 1981 to fifty in 2009. The increase is 38. The volume of increase is 317%. The increase in patients reported from 1981 (11,180) to 2009 (46,198) is 35,018. The volume of increase is 313%. The analysis reveals that there is an increase in health care centers, doctors and also patients reported in Hindupur Municipality.
The sanitary facility analysis from 1981 to 2009 shows an increase in public latrines and public urinals by eight each, dustbins by 190, wheel burrows by 100, waste disposal tri-cycles by 30 numbers, waste disposal tractors by 11 number and door to door waste disposal collection by 19,555 house-holds. The total number of sanitary workers is 70 in 1981 and 130 in 1991, 230 in 2001 and 340 in 2009. The increase in sanitary workers from 1981 to 2009 is about 270. There is no increase in dump site. Overall the sanitary facilities are kept in good condition to maintain clean environment in the Hindupur Municipality.

In Hindupur Municipality the filtered water supply is being given once in four days for about 80% of the town and the balance 20% uncovered areas, water is being supplied through 10 tankers. From Sri Sreerama Reddy Water Supply Project it is estimated is about 8 MLD can be supplied to the Hindupur Municipality in addition to 1.5 MLD supply from power bore wells in various localities of the Hindupur Municipality. The additional water supply from PABR will ease the frequency of water supply in some localities once in two days and in some localities alternate days.

The average monthly consumption of power in Hindupur Municipality is 149.10 MWH. Out of this 26.61 MWH (17.8%) is used for domestic purpose, 18.10 MWH (12.14%) is used for commercial purpose, 12.54 MWH (8.42%) for industrial purpose, 6.1 MWH (4.09%) for street lightings, 50.50 MWH (33.90%) for spinning mill and others 35.25 MWH (23.65%).

Hindupur Municipality has two major parks eight cinema theaters, one playground, one indoor stadium, two social clubs and two public libraries during 2009. The recreational facilities are poorly developed in Hindupur Municipality. The
municipal authorities have to take appropriate measures for development of recreational facilities.

Transportation facilities promote the expansion of urban settlements. The total road length of Hindupur Municipality is 240 km out of which 70% is surfaced road and 30% is un-surfaced roads.

There are about 10,000 land line telephone connections and about 40,000 mobile connections in Hindupur Municipality. There are about 10 post offices located in different parts of the municipality. The head post office is located in Vasavi Dharmasala Road.

There are about 12 banks in the Hindupur Municipality. Out of them two are State Bank of India, one is State Bank of Hyderabad, one Andhra Bank, one Syndicate Bank, one Union Bank of India, one HDFC Bank, one ICICI Bank, one Axis Bank, one ING Vysya Bank, one Ananta Grameena Bank, one Hindupur Urban Co-operative Town Bank. They are well distributed in the Hindupur Municipality.

Marketing facilities are social and economic institutions of urban growth centers. The main commodities traded in Hindupur Municipality are tamarind, jaggery, dry chillies and silk. There is one major vegetable market on the main bazaar near Parigi bus stand (Old bus stand). There are two fruit markets, 2 fish markets, 4 chicken and mutton markets. There are three major shopping complexes. There are about 250 grocery shops, 50 clothe shops, 30 stationery shops, 15 electrical shops, 40 medical shops, 50 hotels and restaurants, 26 jeweler shops, 20 sweet marts and bakeries, 16 wine shops, 30 cool drinks shops, 25 dry cleaners, 8 optical shops and 120 other shops. In total there are about 680 shops in Hindupur Municipality in 2009.
The municipal waste effluents pollute tanks, streams and ground water. Water borne diseases are noticed due to biological agents like house flies which transmit bacteria, viruses, viral hepatitis, typhoid, dysentery, cholera and warm infestations. Such diseases are reported from the existing dump yards on the Parigi road near Mothukupalli. During rainy seasons the solid waste generates more unhealthy conditions and spreads many diseases in the municipal area. It is mainly because of the irregular collection of solid waste by the Hindupur Municipality. The existing dump site is located near Mothukupalli on the Parigi road within the municipal limit. It is proposed to shift the present dump site to out side the municipal limit on the Parigi road. In addition to this dump site three additional dump sites are recommended to dump the solid waste on the northern Penukonda road, eastern Lepakshi road and southern Bangalore road to minimize the pressure on the Parigi road dump yard and distribute equally to other dump yards from different parts of the Hindupur Municipality.

The analysis of urban slum population reveals that from 1961 to 2009, there is high growth of urban slum population during this period compared to that of urban population growth. It reveals that many people from the surrounding environs of Hindupur Municipality have migrated for employment and livelihood.

There are 42 notified urban slums with a population of 42,042 during 2001. The maximum number of 12 slums is found in ward number 5, which are located in southeastern side in Rahmathpuram, Model colony, Chakali kunta, C.P.I.Colony and Lakshmipuram.

The field survey carried out in the slum areas it is found that majority of the house-holds are engaged in low income occupations such as daily wages, hamalis,
construction labour, house-hold workers, auto drivers, automobile workers, sweepers, scavengers, carpenters, jatka pullers, fruit and vegetable venders, unskilled labour, mutton – chicken cutters, piggery growers and others.

The health hazards are high in slum areas. The diseases like viral fevers, diarrhea, typhoid, malaria, sexually transmitted diseases, HIV and tuberculosis are reported high from slum dwellers. The income level varies from a minimum of 5000 rupees per annum to the house-hold workers to a maximum of 30,000 to 40,000 rupees to auto drivers. The hamalies, fruit venders, mechanics, auto mobile workers income ranges from 20,000 to 40,000 rupees per annum. The sweepers, scavengers, unskilled labour income varies from 10,000 to 30,000 rupees per annum.

The total length of metal roads is 243.23 km in Hindupur Municipality. The maximum length of 40.99 km roads is noticed in ward number 5 and the minimum length of 0.78 km is noticed in ward number 15.

The vehicular flow per day is more than 4000 vehicles in the central business area of the Hindupur Municipality. The vehicular flow varies from 2000 to 4000 per day in the roads surrounding the core zone area (C.B.D). The vehicles flow is less than 2000 per day in the peripheral ward roads of the Hindupur Municipality.

From the analysis of number of residential houses available, required and shortage of houses it is found that there is an increase in number of houses by 21,258 from 1961 to 2009. The relative increase is 561%. The number of houses required has increased by 24,219 from 1961 to 2009 and the relative increase is 448%. The shortage of houses has increased by 2961 from 1961 to 2009 and the relative increase is in shortage of houses is 183%. From the analysis it is found that as population has
grown from 1961 (32,445) to 2009 (1,15,000) and the requirement of number of houses has relatively increased from 1961 to 2009. Due to shortage of houses the urban poor are encroaching filled in tanks, along drainage lines, railway lines and Government lands. This led to development of about 52 (42 notified and 10 un-notified) slums in the Hindupur Municipality.

There is a great demand for daily water in the Hindupur Municipality. The municipality could supply water once in three or four days. Recently Sri Neelakantapuram Sreeramireddy water supply project was executed from December, 2008. The water supply from ground water is 1.5 million liters per day which is drawn from 182 functioning bore wells. They vary in depth from 175 to 275 meters. The water is supplied to Hindupur Municipality once in two to four days in some localities and alternative days in Sadlapalli, Teachers Colony, Indira Nagar, Panduranga Nagar, Public Health Office, Satya Sai Nagar, Melapuram, Muddireddipalli, R.T.C.Colony, Dharmapuram, D.B.Colony, Lakshmipuram, Model Colony, C.P.I.Colony and Rahmathpuram under S.N.S.R water supply project. Through Hindupur is provided with three major tanks, the water could not fill up in the tanks due to low rainfall, high potential evapotranspiration, low actual evapotranspiration, high water deficit and frequent occurrence of droughts. Due to low annual recharge and over extraction of ground water resources, some of the bore wells are drying up and in some of them, the yield is very low.

6. The index of concentration of upper respiratory infections is high in ward numbers 1, 2, 5, 7, 9, 10, 11, 12, 13, 15, 18, 20 and 21. In other wards the concentration is moderate. The concentration of bronchitis is high in ward numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 18 and 21. In other wards the concentration is
The concentration of viral fevers is high in ward numbers 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29 and 30. In other wards it is moderate. The concentration of dysentery disease is high in ward numbers 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 18, 24, 25, 26 and 27. In other wards the concentration is moderate. The concentration of gastritis is high in ward numbers 4, 5, 14, 15, 16, 17, 18, 22, 23, 24, 25, 26, 27, 28, 29 and 30. It is low in 2, 6, 7 and 11 wards. In other wards it is moderate. The index of concentration shows that the typhoid occurrence is high in ward numbers 2, 3, 24, 25, 26, 27, 29 and 30. It is moderate in other wards. The concentration is high in northern, eastern and south western parts of the Hindupur Municipality. The index of concentration is high in ward numbers 5, 22, 23, 29 and 30. It is low in ward number 9 in other wards it is moderate. The concentration of skin diseases is high in ward number 17, 22, 23, 26, 27, 28, 29 and 30. In other wards it is moderate. The concentration of cardiac disorders is high in 1, 4, 6, 15, 21, 22, 23, 24, 25, 26, 27, 29 and 30 wards. In other wards it is moderate. The concentration of tuberculosis is high in ward numbers 1, 4, 6, 7, 8, 9, 11, 14, 16, 22, 23, 25 and 28. In other wards it is moderate. The concentration of sexually transmitted diseases is high in ward numbers 1, 2, 3, 4, 7, 8, 9, 10, 13, 17, 19, 20 and 21. In other wards it is moderate.

The ward wise percentage distribution of diseases showing histograms reveal that first ranking disease is bronchitis in ward numbers 1, 2, 3, 12, 16, 18 and 21. The upper respiratory diseases stand as first rank in ward numbers 1, 13, 15 and 23. The viral fevers stand as first ranking disease in ward numbers 4, 6, 7, 8, 9, 10, 11, 17, 24, 25, 29 and 30. The dysentery stands as first ranking disease in 14, 26 and 27 wards. Malaria stands as first ranking disease in 22, 29 and 30 wards. In ward numbers 19 and 20 the sexually transmitted diseases stand as first rank.
From the analysis it is found that in ward numbers 10, 11, 13 and 20 the five disease combinations are found. In 7, 8, 9, 12, 15 and 19 wards six disease combinations are noticed. Seven disease combinations are found in ward numbers 1, 2, 3, 4, 5, 14, 18, 21 and 28. Eight disease combinations are noticed in ward numbers 6, 16, 17, 22, 23, 24, 25, 26, 27, 29 and 30.

The lower the index of diversification, more the diseases diversification and the higher the index more the specialization. Very high diversification is found in ward numbers 5 and 26. Moderate diversification is found in ward numbers 4, 13, 17 and 27. In other wards the disease diversification is very low.

The intensity of diseases varies from a minimum of 18% in ward number 8 and 23 to a maximum of 57% in ward number 5. The spatial distribution shows that the intensity of diseases is less than 20% in ward numbers 8, 22 and 23. The intensity of diseases exceeds 40% in ward numbers 4, 5 and 17. In the remaining 24 wards the intensity of diseases varies from 20% to 40%. The intensity of diseases of Hindupur Municipality is 37%.

From the analysis it is found that the endemic value in percentage varies from a minimum of 17.91 in ward number 7 to a maximum of 41.38 in ward number 5. The spatial distribution shows that the endemic value is less than 20% in ward numbers 6, 7, 8, 11, 15, 20 and 22. It varies from 20 to 30% in ward numbers 1,2,3,4,9,10,12,13, 14,16,18,19,21,23,24,25,27,28,29 and 30. The endemic value is more than 30% in ward numbers 5, 17 and 26.

All the hospitals are concentrated near old and new RTC Bus stands. The concentration of hospitals in and around the old and new bus stands have developed
due to nearest location of old and new bus stands. It has also paved less accessibility to the peripheral wards of the Hindupur Municipality. Therefore it is proposed that there should be at least one hospital in each ward particularly in the peripheral wards which cover a minimum population of 5000 each.

7. If overall density is 125 persons per hectare the land requirement for residential use is 1310 hectares in 2011, 1717 hectares in 2021, 2249 hectares in 2031, 3037 hectares in 2041 and 4130 hectares in 2051. As there is sufficient agriculture and vacant land in Hindupur Municipality, the land requirement for residential use is sufficient up to 2041. The municipality has to plan expansion of planned residential area in the western, southwestern, northwestern and southeastern parts of the Hindupur Municipality.

8. The total number of workers in trade and commercial activity are estimated to be 8420 in 2001. The number of workers in this category will be about 10,270 in 2011. The projected workers will be 12,221 in 2021, 14,665 in 2031, 17,598 in 2041 and 21,118 in 2051. The existing land for commercial activity is 100 hectares in 2009. The land requirement for this activity is worked out at the standard of one hundred workers for gross hectare. The requirement land for commercial activities is 103 hectares in 2011, 122 hectares in 2021, 147 hectares in 2031, 176 hectares in 2041 and 211 hectares in 2051.

9. The industrial working force in Hindupur Municipality is about 5820 in 2001. It is estimated that the projected industrial workers will be 6,847 in 2011, 7,874 in 2021, 9,055 in 2031, 10,413 in 2041 and 11,975 in 2051. The existing land for industrial use is 90 hectares in 2001. The requirement of land for industrial use is 104
hectares in 2011, 120 hectares in 2021, 144 hectares in 2031, 174 hectares in 2041 and 210 hectares in 2051.

10. A standard of 0.6 hectares is the developable area for 1000 population for recreational and public use. The existing land use is 30 hectares in 2001. The required land is 75 hectares in 2001 for recreational use. There is a shortage of 45 hectares. The land required for recreational use in 2011 will be 98 hectares, 129 hectares in 2021, 169 hectares in 2031, 228 hectares in 2041 and 310 hectares in 2051.

11. The land available for public and semi-public is about 100 hectares in 2001. It is estimated that the land requirement for public and semi public offices use will be about 120 hectares in 2011, 144 hectares in 2021, 173 hectares in 2031, 208 hectares in 2041 and 250 hectares in 2051.

12. The land available for transport and communications in 2001 is 200 hectares. By 2011 it is estimated that the land required for transport and communications is about 320 hectares. In 2021 the land required for transport and communications will be about 400 hectares. In 2031 the requirement will be around 480 hectares. By 2041 the requirement will be about 576 hectares and by 2051 the land requirement for transport and communications will be 690 hectares.

The total land requirement for different urban land uses in Hindupur Municipality is estimated to be 2055 hectares in 2011, 2633 hectares in 2021, 3362 hectares in 2031, 4399 hectares in 2041 and 5801 hectares in 2051. The existing land under water bodies is 320 hectares. There are three major tanks in Hindupur Municipality which are aligned in northeast, southwest direction. These three water bodies can not be disturbed for any urban land uses. However a few urban slums are
developed along the banks of these tanks. Additional land of 903 hectares is required by 2041 and 2305 hectares of additional land is required by 2051. Out of the total land requirement of 6121 hectares including area under water bodies, about 67% of land will be utilized for residential purposes, 3.5% of commercial, 3.5% of industrial, 5% of recreational, 4% of public and semi-public offices, 11% of transport and communications and 5% of water bodies.

13. Daily water supply to the Hindupur Municipality is 9.50 million liters per day (MLD). About 2.41 MLD is supplied through a sump at Rahamathpuram. The water from PABR sump is being pumped to elevated service reservoirs at Kota, Model colony, Krishna Layout and Srikantapuram with three numbers 15 H.P.pump sets and one pump set is provided for filling of tankers to the un served localities. Totally 8 MLD of water is being supplied to the Hindupur Municipality from PABR sump. About 1.5 MLD of water is being supplied to various localities from power bore wells the water is being supplied once in two to four days frequency in some localities and in alternate days in some other localities. There are about 16 elevated service reservoirs (ELSR), four ground level service reservoirs (GLSR), 26 cisterns, 14 pump and sump houses, 182 functioning bore wells, 1200 public taps, 7524 house service connections, 1713 below poverty line house service connections and 102 commercial tap connections. The daily water requirement in 2001 is 12.5 MLD. By 2011 the water requirement is 16.338 MLD. In 2021 the water requirement for Hindupur Municipality is 21.46 MLD. In 2031 the water requirement is 28.17 MLD, in 2041 it is 37.95 MLD and by 2051 the water requirement is 51.62 MLD. The Hindupur Municipality has to double the required municipal water supply by 2021 and treble by 2041 and four times by 2051. There is going to be an acute water shortage in
Hindupur Municipality despite the newly commissioned Sri Neelakantapuram SreeRama Reddy Water Supply Scheme from Penna Ahobilam Balancing Reservoir.

14. There is open drainage system with 215 pucca drains, 23 kuchha drains and eight storm water drains. In view of discharge of sewage water into open drains, there is overflow and stagnation of sewage water due to obstructions by the disposal polythene covers. Mosquitoes breeding are very high in the open drain system leading to health hazards. There is a connecting canal between the Penna River and Kotnur tank to store the excess flood water discharged in the river during monsoon season. It is observed this canal is dry throughout the year in view of low rainfall and frequent droughts. This canal is being used now for discharge of sewage water. A comprehensive under ground drainage system has to be planned in the Hindupur Municipality in different phases to avoid the drainage problems.

15. As the Hindupur Municipality is growing rapidly there is a need for development of commercial centers along the major roads of Penukonda road, Bangalore road, Lepakshi road, Parigi road and main bazaar area, china market area, old bus stand area and new bus stand area. There is one separate market for sale of mulberry cocoons on the bypass road near the new RTC bus stand. Hindupur is known for commercial business of tamarind, jaggery and dry chillies. The municipality should provide separate market areas for these three products for day to day transactions in the municipal area. There should be at least one marketing center for every 10,000 population. Hindupur Municipality has to develop about fifteen marketing centers distributed all over the municipal area in different wards for business purposes.
16. There are no well organized parks in the Hindupur Municipality except a few small parks. Recreational parks are not found in the Hindupur Municipality. There should be at least one recreational park for every 10,000 population. Hindupur Municipality has to develop about fifteen parks distributed all over the areas of the Hindupur Municipality. There is only one playground with an indoor stadium near M.G.M High School. Such playgrounds have to be developed for every 10,000 population.

17. The major roads of Hindupur Municipality are over loaded with heavy and light vehicles, trucks, cars, auto rickshaws and motor cycles. They are flying on Bangalore road, Penukonda road, Lepakshi road and Parigi road, Chinna market area and Main bazaar area. There are only two 25 meter double roads in Hindupur Municipality. One road leading from old bus stand to Parigi road and another road between Main bazaar and new RTC bus stand. One bypass road has been proposed and partially completed. Majority of the roads are narrow and less than five meters width. The first step that Hindupur Municipality has to take up is widening of roads along the main bazaar, china market area, Dhanalakshmi Road, mukhidipeta and Abadpeta. The bypass road connecting Penukonda and Bangalore roads should be completed as early as possible to reduce the congestion in the core area of the Hindupur Municipality.

18. There are about 42 notified slums with a total population of 42,024 in 2001. It amounts to 33.60% of the total population in 2001. By 2011 it is estimated that the slum population would be around 65,538 by 2021 it would be around 81,563. In 2031 it is estimated that the slum population would be around 1,06,847. By 2041 the slum population would be around 1,36,652 and by 2051 it would be around 2,00,000.
2021 the slum population would be doubled, trebled by 2041 and increased by four times by 2051. Therefore the Hindupur Municipality has to take appropriate measures for providing housing, water ventilation, lighting, sanitation, drainage and waste disposal facilities to the urban dwellers. The Government of India and Andhra Pradesh have envisaged development programs for urban poor for providing housing, water, sanitation, lighting, drainage and waste disposal.

19. The Government of India has proposed a minimum of five hectares of green belt development for every 10,000 population. The Hindupur Municipality has to develop about 125 hectares of green belts in 2001. There are no such green belts developed by the Hindupur Municipality except the private agriculture lands covered with green trees. The requirement of area for development green belts is about 164 hectares in 2011, 215 hectares in 2021, 281 hectares in 2031, 380 hectares in 2041 and 516 hectares in 2051. These belts can be developed along the major banks of the Penna River, tanks and specified areas distributed all over the municipal area. The Ministry of Environment and Forest Resources and the National Waste Land Development Board of Government of India are providing financial support to develop green belts in the urban areas. The Hindupur Municipality authorities should send proposals for financial support to develop green belts in the municipal area.