

Urbanisation and Slums distribution in Visakhapatnam City- A Geographical Study

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Abstract:- The increase in urban population and the resultant increase in the urban area is called Urbanisation. The increase of population in the urban area takes place by the natural growth of population and also by migrations of rural population to urban areas. Urbanisation brings spatial, temporal and structural changes in the demographic, social, economical, technological and environmental aspects of life in a given society. The accumulation of wealth and availability of job opportunities in the urban centers have resulted into the concentration of human population in limited space. About 29 % of the total world population was recorded as urban population in 1951 and it increased to 54 % in 2011 period. Though urbanisation is an indicator of development, but it is also bitter fact that poverty is growing faster in urban areas in the form of slums. Hence, rapid Urbanisation and Industrialisation without needed urban infrastructure development has resulted in slums and they are residential areas of poor urban people. Keeping the above aspects under consideration an attempt is made in this paper to study pattern of urbanisation and formation distribution of slums in Visakhapatnam city.

Keywords:- Urban population, Decadal growth rate, population density, Population concentration, Population growth, Slums.

I. INTRODUCTION

(a). Urbanisation:

The increase in urban population and the resultant increase in the urban area is called Urbanisation. The increasing of population in the urban area takes place by natural growth of population and also by migrations of rural population to urban areas. Urbanisation brings spatial, temporal and structural changes in the demographic, social, economical, technological and environmental aspects of life in a given society. The accumulation of wealth and availability of job opportunities in the urban centres have resulted into the concentration of human population in limited space. According to United Nations (UN) statistics, global share of the urban population increased more than fourfold during the 20th century (UN 2010) and unhabitatin 2010 said urban population growth is linked to development.

About 29 % of the total world population was recorded as urban population in 1951 and it increased to 54 % in 2011 period. About 17.6 % of the total Indian population was recorded as urban population in 1951 and it increased to 31.16 % in 2011 census. Regarding Andhra Pradesh, about 17.42% of the total state population (combined AP) was recorded as urban population in 1951 and it increased to 33.35 % in 2011, whereas about 12.24 % of the total population of the Visakhapatnam district registered as urban population in 1951 and it increased to 47.51 % in 2011 period. Visakhapatnam district recorded highest urban population (14 %) of the total urban population of all district of Andhra Pradesh. Further it was also observed that, about 85 percent of the total urban population of Visakhapatnam District was concentrated in Visakhapatnam City (GVMC).

(b). slums:

Though urbanisation is an indicator of development, but it is also bitter fact that poverty is growing faster in urban areas in the form of slums. Rapid Urbanisation and Industrialisation without needed urban infrastructure development has resulted in slums and they are residential areas of poor urban people. Geographically, a slum is an urban site possessing over crowded, dilapidated and faulty laid out and lacking in essential services are generally termed as 'Slums'. A slum is an urban site formed by migration of people, having a contrasting spatial, structural and socio-economic conditions of the Urban environment. A publication by UNESCO (2013) points out that Slums and squatters are considered as problem areas for urban development in third world countries.

Migrations into cities and towns are predominantly engaged in the informal sector as construction workers, hawkers and vendors, domestic servants rickshaw pullers / drivers, electricians, plumbers masons, security personnel etc. A large number of these jobs are seasonal and temporary in nature and take place in cities.

Slums are of two types, they are Notified and Non-notified slums. Areas notified as slums by the respective municipalities, corporations, local bodies or development authorities including slum act are treated as notified slums. A slum is considered as a non-notified slum when, any compact settlement with a collection of poorly built

tenements, mostly of temporary nature, crowded together, usually with inadequate sanitary and drinking water facilities in unhygienic conditions with at least 20 households live there, then it will be called as “non-notified slum” or unrecognized slum.

According to world bank report 2018 and according to the statistical yearbook of Asia and pacific-2014 (India), the total percent of the population living in slums in India were 46% in 1990, 39% in 2000, 33% in 2010 and 29% in 2018. According to UN-HABITAT report, April, 2017, India is a third world country that suffers from poverty, malnutrition, diseases, unhealthy conditions, and more in Indian slums. In India every fifth urban resident lived in slums according to the 2011 census .

According to 2011 census , India registered about 2,216 towns with about 1,08,227 slums(notified or recognised or identified slums) having about 6,54,94,604 slum population and this slum population contributes about 5.41% of the total population of India. Further slum population constitutes 17.45 % of the total urban population and the decadal growth of slum population was about 25.1% during 2001-11 period. Andhra Pradesh share in total slum population of India was 12% in 2001 and it increased to 15.6% in 2011.

According to Mission for Elimination of Poverty in Municipal areas, Dept., of Municipal Administration & Urban development, Govt. of Andhra Pradesh-2011, there were about 4397 slums present in A.P with 25,70,122 slum population. Of the total slums in Andhra Pradesh about 738 slums (17%) were present in Visakhapatnam district and Greater Visakhapatnam Municipal Corporation (GVMC) stood second position in having slum population to total urban population with 44.61 % among all million plus cities, 2011 . In this context an attempt is made in this paper to study urbanisation and slums distribution in Visakhapatnam city (GVMC). Further in this paper Greater Visakhapatnam Municipal Corporation (GVMC) geographical area treated as Visakhapatnam city.

Study area:

Visakhapatnam city (GVMC) lies (Fig. No.1) between $17^{\circ} 58' 21''$ N to $17^{\circ} 24' 45''$ N. Latitudes and $82^{\circ} 51' 0''$ E. to $83^{\circ} 27' 0''$ E. Longitudes. The Visakhapatnam city (GVMC) administratively divided into six (6) Zones and these six zones are again subdivided into 72 Wards. zone-1 contains 6 wards, zone-2 has 12 wards ,zone-3 contains 12 wards, zone-4 has 19 wards, zone-5 contains 15 wards and zone-6 contains 7 wards.

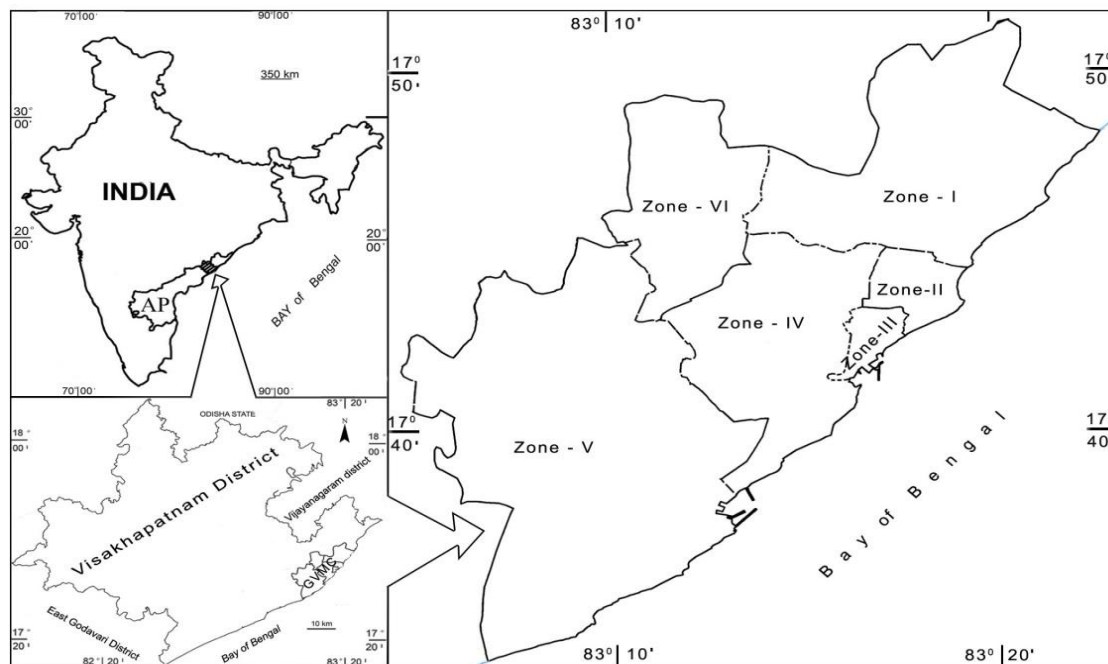


Fig.No.1: Location map of the study area showing Zones of Visakhapatnam city (GVMC).

According to 2011 census Visakhapatnam city (GVMC) recorded about 17,28,128 population and with a population density of 3,191 persons / sq. km. The total Geographical area of the Visakhapatnam city is 539.95 sq. Km. The Greater Visakhapatnam Municipal Corporation (GVMC) entire geographical area taken for the study and it is treated as Visakhapatnam City in this research paper .The study area (Visakhapatnam city) located in Visakhapatnam district which comes under North Coastal Andhra Pradesh and this is a backward region in the context of economical

and social aspects. As the study area is having port and many major and medium industries located in and around the Visakhapatnam city, large number of population migrated from Srikakulam, Vizianagaram & East Godavari districts and also from Northern India into the Visakhapatnam city for various reasons.

Objectives:

- 1) To study the decadal growth rate of urban population.
- 2) To study industrial growth, working and non- working

population growth.

3) To study distribution of slums.

Database and Methodology:

The major data used in this paper is pertaining to Visakhapatnam city (Greater Visakhapatnam Municipal Corporation-GVMC) and the data collected from the Census reports of Visakhapatnam district, Vishakhapatnam Urban Development Authority (VUDA), Government of Andhra Pradesh, Government of India, Greater Visakhapatnam Municipal Corporation(GVMC) regarding population reports during 1901 to2011 period.

II. RESULTS AND DISCUSSION

I. Urbanisation during 1901 to 2011 period in Visakhapatnam City (GVMC):

Decadal growth of urban population along with its rate in Visakhapatnam city presentend in Table.no.1. The Visakhapatnam was a small municipal town (class –III town) in 1901, with a population of about 40,892 and spread in less than 15 sq kms geographical area.Due to establishment of Andhra University,construction of new civil hospital and opening of fishing Harbour in Visakhapatnam town between 1911,1921,1931 , brought a lot of change in the physical landscape of the study area. In addition to this, the establishment of Hindustan shipyard in 1941, and Naval base in 1942 added further to the growth of urban population along with physical growth of the study area.

Table No.1: Urban population growth in Visakhapatnam city (GVMC) ,1901-2011 :

Year	Type of urban area	Geographical area in sq.kms	Total population	Decadal growth rate (%)
1901	Class - III Town	15.5	40,892	
1911	Class - III Town	15.5	43,413	6.17
1921	Class - III Town	15.62	44,711	2.99
1931	Class - II Town	15.62	57,303	28.16
1941	Class - II Town	15.62	70,243	22.58
1951	Class - I Town	15.62	1,08,042	53.81
1961	Class-I-Town/Visakhapatnam Municipal Corporation	29.14	2,11,190	95.47
1971	Class - I - Town/ Visakhapatnam Municipal Corporation	94.53	3,63,467	72.1
1981	Class - I - Town/ Visakhapatnam Municipal Corporation	96.54	6,03,630	66.08
1991	Visakhapatnam Municipal Corporation/ Metropolitan city	310.77	10,44,119	72.97
2001	Visakhapatnam Municipal Corporation/ Metropolitan city	325.83	13,45,938	28.91
2011	Greater Visakhapatnam Municipal Corporation (GVMC)/ Metropolitan city	539.95	17,28,128	28.4

Source: computed from Visakhapatnam district censusreports: 1901-2011 period.

At this juncture, it was observed that, due to increased possibilities of employment in the above said establishments stimulated large scale migrations into the Visakhapatnam town from surrounding areas and districts. Therefore the study area experienced rapid urban population growth after country's Independence in 1947.In 1951 the Visakhapatnam town recorded population of about 1,08,042 with a growth rate of 53.8 %. During this period, Indian oxygen plant established in 1951 and oil refinery in 1957 had been stimulated the growth rate of urban population in Visakhapatnam city.In 1961 census period the study area registered about 2,11,190 urban population with a growth rate of 95.47%and also the Geographicalarea increased to 29.14 sq. kms. The study area gained real importance during this period due to the establishment of many industries

which had resulted in considerable spread with the development of new colonies in southwest part of the town and also in the north. The industrial development in the town has given a fillip to the tremendous population explosion. The new development in the town took place in the north eastern, north western and south western sectors due to the establishment of institutions, defence establishments and large-scale industries. With the establishment of Coromandel Fertilizers (1964), Ore handling plant (1966), Industrial Estate, and extension of railway line towards north influenced the population to concentrate towards foot of the Kailasagiri range. The ribbon extension in this part of the town was also intensified with the establishment of institutions and railway marshalling yard. In 1971 the study area recorded 3,63,467

population with a growth rate of 72.1 % and municipal limits of the study area increased to 94.53 sq. kms. During 1971-81 period, BHPV (1971), Hindustan polymers (1977), Dry dock project (1977), Visakha steel plant (1980) and widening of NH-5 road also proposed. New colonies were added towards North of the study area and along the foot hills of Kailasa giri range. In 1981 the Visakhapatnam town upgraded to Municipal corporation status and then the study area recorded about 6,03,630 population with a growth rate of 66.1 % and Visakhapatnam Municipal corporation limits extended to 96.54 sq. kms. In 1991 the study area recorded about 10,44,119 population with a growth rate of 72.9 % and again Visakhapatnam Municipal Corporation limits extended and increased to 310.77 sq. kms. In 2001 the Visakhapatnam city recorded population about 13,45,938 with a growth rate of 28.9 % and Further, in 2005 Visakhapatnam municipal corporation upgraded as Greater Visakhapatnam Municipal Corporation by merging Gajuwaka town and 32 villages into the city, and the study area geographical limits increased to 325.83 sq.kms. In 2011, the study area recorded about 17,28,128 urban population with a growth rate of 28.4 percent and the geographical limits of study area increased to 539.95 sq.

Kms. It is observed from the above discussions that, about 164% urban population growth rate recorded during 1901 to 1951 period, whereas about 718% urban population growth rate recorded during 1961-2011 period in the study area. The average urban population growth rate since 1901 to 2011 period was 43.4 percent. All the above discussed conditions transformed Visakhapatnam town into a big city or a big urban area within the Visakhapatnam district by the process of urbanization and industrialization and this helped due to the natural growth of urban population and population migrations in to the city for various reasons.

II . Industrial sector and working population growth in Visakhapatnam city (GVMC):

As Industrialisation leads to Urbanisation, the present study discussed about Industrial sector growth and also working population growth over the period to understand relation between Urbanisation, Industrialisation and slums formation.

(a) Industrial sector growth:

Table.no:2-Distribution and growth of Large, Medium and Small scale Industries:

	YEAR	1995	2004	2011
s.no	Zone no	No of large medium and small scale industries	No of large medium and small scale industries	No of large medium and small scale industries
I	I	0	33	205
2	II, III, IV	417	235	258
3	V	260	371	808
4	VI	67	65	81
		744	704	1352

Source -computed from the Hand book of statistics of Visakhapatnam dist

Table.no:2-showing distribution of large, medium and small scale industries in the study region and it is observed from the table that, number of industries increased from 744 in 1995 to 1346 industries in 2011. More number of industries 417 were observed in Zone II, II,IV in 1995, and in zone -V(371) in 2004 and again in Zone- V (808) in

2011. It is understand from the table that most of the industries were located in II, II, IV in 1995 and thereafter industrial growth shifted to Zone- V in 2004 and again shifted to Zone-I in 2011 period.

(b) Working and non- Working population growth:

Table no.3-Percentage of distribution of Working and non-working population:

Serial no.	Year	Total Population	% of Total workers	% of Total non - workers
1	1981	7,74,195	28.7	71.3
2	1991	1128101	29.2	70.8
3	2001	1444148	30.9	69.1
4	2011	1730327	35.5	64.5

Source -computed from the Hand book of statistics of Visakhapatnam district during 1981-2011.

Percentage of distribution of working and non-working population in the Visakhapatnam city (GVMC) during 1981-2011 period presented in Table.no:3. In this table Total population include both workers and non-workers, where as Total workers include (1) main workers,(2) house hold industry,(3) other than house hold industry and (4) marginal workers. It can be observed from the table that, working population in Visakhapatnam city increased from 28.7% in 1981 to 35.5% of the

Visakhapatnam city total population where as non working population decreased from 71.3% 1981 to 64.5% of the total Visakhapatnam city population.

III. Distribution of land area, population concentration and population density according to zones in the study region

To find out impact of urbanisation in the study region, on formation and distribution of slums, the study examined

available land area, population concentration and population density.

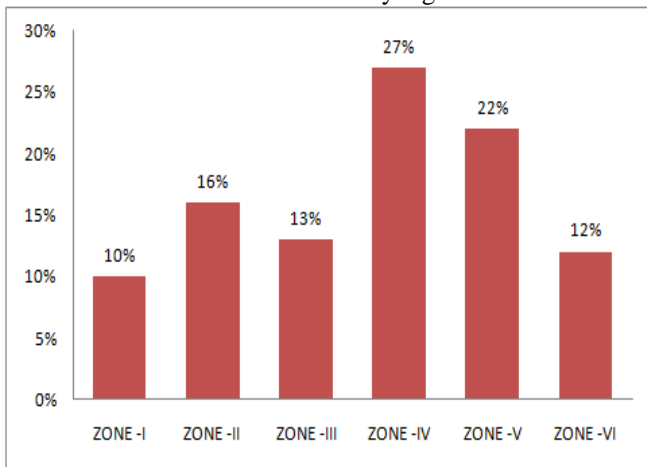
(a) Distribution of Geographical land area in the study region:

The land use/land cover distribution in the study region was around 43% under Hills(And forests, Scrubs, Plantations, vegetation), around 18% under Industry, around 12% under Barrenland & uncultivable land, around 8% under water bodies and around 19% under settlements. Regarding geographical area of the Visakhapatnam city (GVMC) according to zones, highest percentage of land area noticed in zone-V(41%), followed by zone-I(23%), zone-IV(16%), zone-VI(15%), zone-II(3%) and lowest percentage of land area present in zone-III(2%). As most of the land area (69%) occupied by Hills, Industry, Water bodies, and very less land area available for settlements/housing in the study region, the poor native people and poor migrated people constructed very small houses and finally they transformed into slums in different areas of the study region.

(b) Distribution of population concentration:

To find out where more number of slums present, the study discussed about population concentration according to zones in the study region.

Fig. no: 2- Percentage of Population concentration according to zones in the study region.



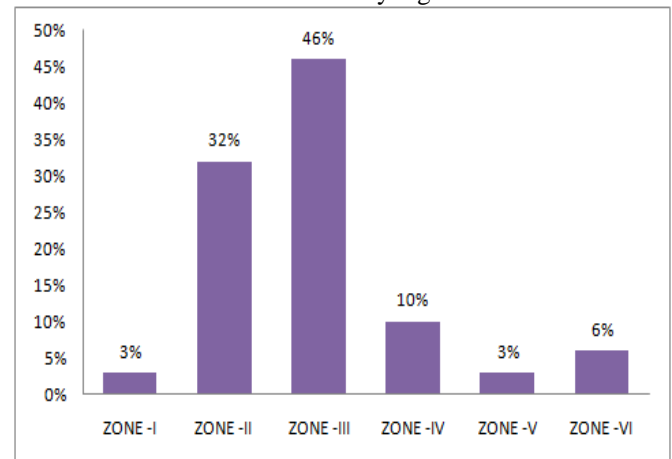
Source: computed from Visakhapatnam dist census report-2011

Percentage of population concentration according to zones in Visakhapatnam City (GVMC) presented in figure no.2. Highest population concentration noticed in zone-IV (27%) followed by zone-V(22%), zone-II(16%), zone-III(13%), zone-VI(12%) and lowest population concentration noticed in zone-I (10%) among all the zones in the study region.

(c) Distribution of population density:

To find out where more number of slums present, the study discussed about population density according to zones in the study region.

Fig no:3- Percentage of Population density according to zones in the study region.



Source: computed from Visakhapatnam dist census report-2011

Percentage of population density according to zones in Visakhapatnam City (GVMC) presented in figure no.3. Highest population density noticed in zone – III (46%) followed by zone-II (32%), zone-IV (10%), zone-VI (6%), zone-III& V (3% each) among all the zones in the study region.

IV. Growth and distribution of slums in Visakhapatnam City (GVMC):

The above discussion presented that the natural population growth and also growth due to migration of population for want of education, employment in small, medium, and large scale industries and it led to the construction of houses for residential and commercial purposes in the study region. Apart from Industrial sector, House hold& construction industry, Electricity, Gas, and Watersupply, Transport, Storage, Communication industry, Banking, Insurance industry, Service sector etc., which were also contributed for the growth of population and growth of the City. As there were no available houses for migrants and as the urban residential land values increased, the people who were poor, unemployed, migrated to the study area were started construction of small, indecent houses near to their workplaces particularly on the banks of gaddas or small streams, foothills and along the high way and also near railway station. A survey carried out by Urban Community Development Department (UCDD) between 1985-1986, identified a total of 170 slums with a population of 1,91,000. Now these slums were grown and scattered across the city and now the slum population increased to 7,09,740 with high population densities. It was estimated that more than 90% of these slums were present in government lands of Visakhapatnam city and the rest on lands belonging to various public entities. Most of these Slum localities do not have any adequate basic municipal services and amenities. Nearly half of the slum people were engaged in unorganized sector.

(a)Slum Population growth :

Table no: 4-showing theslum population growth during 1951 to 2011 period in the study region. Highest , about 41% of the total city population recorded as slum population in 2011 census period, followed by 29.91% in 1991, and 26.38% in 1981. Regarding decadal growth rate

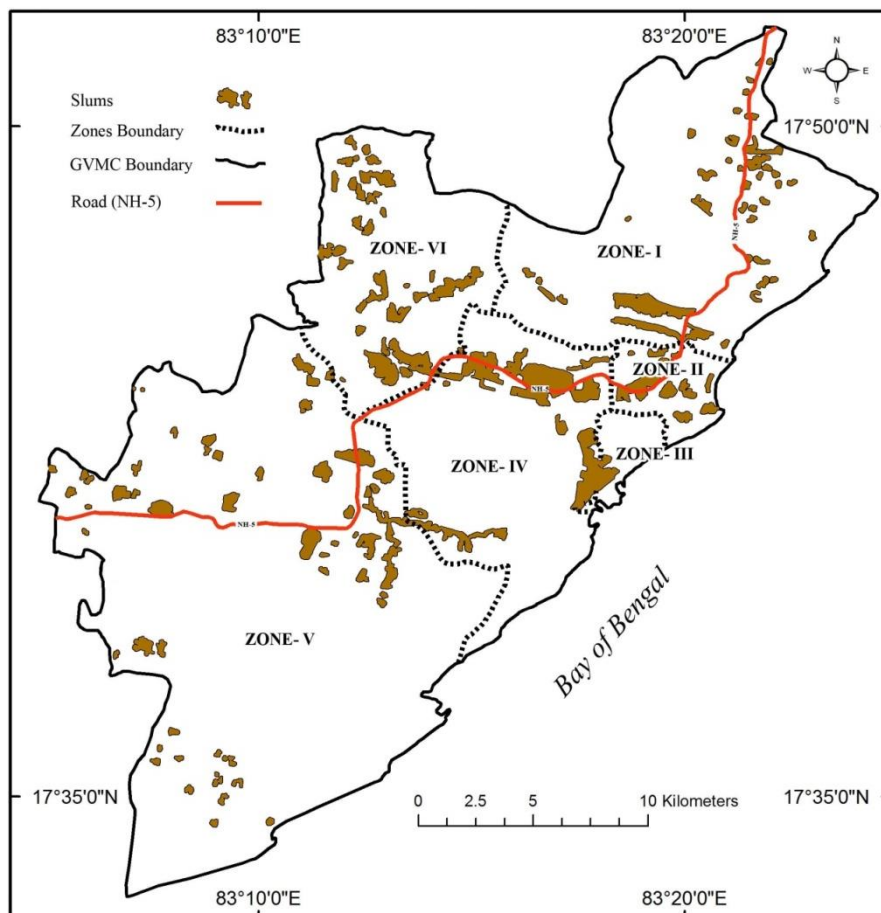
of slum population, about 107.1% growth rate recorded in 2011, followed by 90% in 1961, 75.6% in 1981, 68.5 in 1971, 54.8% in 2001, and 45.6% in 1991.It can be observed from the table that, slum population growing continuously from 1951 to 2011 period without any interruption.

Table no: 4- Slum population growth in Visakhapatnam city during the 1951 -2011 period.

Years	City Population	Total slum population	Percentage of slum population to total population of the study area	Decadal growth rate of slum population in percentage
1951	1,08,042	27,000	24.99%	-
1961	2,11,190	51,357	24.31%	90.0%
1971	3,55,045	86,567	24.38%	68.5%
1981	5,65,513	1,52,000	26.38%	75.6%
1991	7,39,947	2,21,347	29.91%	45.6%
2001	14,13,681	3,42,658	25.46%	54.8%
2011	1728128	7,09,740	41%	107.1%

Source: computed from Visakhapatnam district Census reports 1951-2011.

Fig.no:4 - Map showing distribution of slum pockets according to zones in Visakhapatnam city (GVMC)



Source : Prepared from GVMC records

Fig no:4- showing spatial distribution of slum pockets according to zones in Visakhapatnam city (GVMC).The basic slum map of Visakhapatnam city (GVMC) collected from a book– Multi Hazard Risk and Vulnerability Analysis of Visakhapatnam city, submitted to GVMC in 2014.Further this map again processed through Arc GIS 10.01 software and then a new map prepared for the study.This slum map showing most of the slum pockets were present along NH-5 which is passing through zone-II and zone- IV in the study region whereas a big patch of slum pocket was formed on the west side of zone -III and spread into zone-IV because presence of Port and Fishing harbour in the old city.Regarding distribution of slums (686-slums)according to zones about 24% of total slums present in

zone-I particularly around kailasa hills because it was near to Vizianagaram and Srikakulam districts for migrating poor people and also due to development of software industry whereas about 23% of slums present in zone-IV because presence of Railway head quarter, Port, HPCL etc allied industries. Further about 21% of slums present in zone-V because location of Steel plant, Gangavaram port and NH-5 whereas zone-VI recorded 14% and zone- II & III recorded 9% each. The figure also showing slums were scattered across the study region.

(b) Distribution of slums in Visakhapatnam City (GVMC)

Table.no.5-Percentage of distribution of slums(notified and non-Notified) and slum population

ZON E no.	Total no. of Wards	Percentage of Slums to total slums	Percentage of Notified Slums	Percentage of non-Notified Slums	Percentage of slum Population to total slum population
Z - I	6	24.0	10.8	32.3	16
Z - II	12	9.0	13.1	5.7	9
Z - III	12	9.0	18.3	1.9	13
Z - IV	19	23.0	45.9	9.3	30
Z - V	15	21.0	8.6	29.4	21
Z - VI	7	14.0	3.4	21.3	11
Total	72	100.0	100.0	100.0	100.0

Source: Computed from Visakhapatnam district Census – 2011, & GVMC-reports

Percentage of distribution of slums (Notified Slums & non- Notified Slums), and slum population according to zones in Visakhapatnam City (GVMC) ,during 2011 period presented in Table no.5. Regarding slum population, about 7,09,740 (100%) population recorded as slum population in which about 30% of the total slum population recorded in zone-IV, followed by zone-V(21%),zone-I(16%)zone-VI(11%),zone-III(13%) and zone-II(9%) during the study period. Regarding Notified slums about 45.9 percent were present in zone – IV, whereas above 80% of non- Notified slums concentrated in zone-I, V & VI.

III. CONCLUSION

It is evident from the above analysis that, large number of major, medium and small scale industries were grown extensively during 1995-2011 period due to which highest urban population growth rate recorded in 1961 with 95.47% followed by 1991 with 72.97% in the study area. The percentage of working population increased but non-working population decreased during 1981-2011 period. Further, population density, population concentrations were also increased according to zones. In this background large number of slums were formed, grown and distributed in the study region. Hence, it is evident from this study that, Urbanisation & Industrialisation and physical conditions of city, were contributed for the formation, growth and distribution of slums due to over urban population growth and population density in the Visakhapatnam city.

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