

**“GEOGRAPHICAL ASSESSMENT OF SLUMS AND ITS EFFECT ON URBAN ENVIRONMENT”-A CASE STUDY OF PIMPRI-CHINCHWAD URBAN AREA.**

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TILAK MAHARASHTRA VIDYAPEETH, PUNE.**

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DEPARTMENT OF EARTH SCIENCE (GEOGRAPHY),  
FACULTY OF MORAL AND SOCIAL SCIENCE**

**SUBMITTED BY,  
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**UNDER THE GUIDANCE OF,  
DR. ARUN D.ANDHALE**

**OCTOBER-2014**

**CERTIFICATE**

This is to certify that the thesis entitled “**GEOGRAPHICAL ASSESSMENT OF SLUMS AND ITS EFFECT ON URBAN ENVIRONMENT**”-A CASE STUDY OF PIMPRI-CHINCHWAD URBAN AREA. Which is being submitted herewith for the award of the Degree of Vidyavachaspati (Ph.D.) in Earth Science (Geography) of Tilak Maharashtra Vidyapeeth, Pune is the result of original research work completed by **Mr. Rajesh Trambak Birajdar** under my supervision and guidance. To the best of my knowledge and belief the work incorporated in this thesis has not formed the basis for the award of any Degree or similar title of this or any other University or examining body upon him.

**(DR. ARUN D.ANDHALE)**

**Research Guide**

**Place: Pune**

**Date: October, 2014.**

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## Chapter I

### INTRODUCTION

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## INTRODUCTION

### 1. Introduction:

The growth of slums in urban area is one of the major issues for urban progress authority. The definition of “slum” varies from country to country. In India, each state has its own definition of slum. The National Definition of ‘Slum areas’ was set by the Slum Areas Improvement and Clearance act of 1956. It defines them as places where buildings: are in any respect unfit for human environment; are by reason of dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety, health and morals. (*Vineet Prakash*)

The Census of India defines a slum as "a compact area of at least 300 in population or about 60-70 households of poorly built, congested tenements in an unhygienic environment usually with inadequate infrastructure and lacking proper sanitary and drinking water facilities." Slums are an essential urban phenomenon worldwide and are strung at the lowest rung of the socio-economic collection. They are the shadow zones of urban existence where poverty, crime, aesthetic pollution apart from other types of pollutions, disease and deprivation co-exist. Nevertheless they provide the essential labor-force to work in the industrial and commercial sectors of the cities, not to speak of the service sector which can also be stretched over to cover domestic help in a big way. Physically, they display a dense packing of houses and a further dense clustering of population within the houses. This in turn, is associated with various physical and social problems. (*Vineet Prakash*)

The physical problems manifest themselves in the form of open drains, disorganized layout of structures and roads and apathy in the disposal of garbage. Social or human problems include lack of privacy, imminent conflicts which are bound to arise when people are in close proximity, almost impinging on the space of each other and a related sense of insecurity. The occasional brawls that take place may lead to law and order problems at times. The vulnerability of slum population to indulge in petty crimes and take umbrage in the ‘politically secure’ environment can also not be ruled out and the dense, impenetrable population clusters of almost homogenous groups provide an ideal set-up for this. On the economic front, the slum



population is apparently the most marginalized. Some of them survive on a shoe-string budget or even a hand to mouth existence, though cases of relative opulence hidden in an ocean of poverty cannot be ruled out. However, generally the slum population is below the poverty line.

The concept of a slum is an evaluative one rather than an analytical one and hence what is considered a slum in one cultural setting is an adequate housing facility in another. A slum can be conceptualized on the bases of:

- Physical conditions of the area’s individual housing conditions, crowding, sanitary conditions and lack of access to facilities which make possible the physical and mental well-being of the residence of the area.
- Lack of effective social organization.
- The social image of the area held laid the community at large as the slum-dwellers.

As slum is growing aspect of urban environment it is to be studied in detail to analyse its effect on urban environment. This study proposes to analyse the environmental effect in the slum of Pimpri Chinchwad urban area.

The slums located and growing in urban area causing environmental problems as well as population in slum contributes laborious work in the cities. To analyse and asses these thing properly it is need of time to study slum in detail.

In the tide of change that has engulfed the developing countries by the beginning of the twenty first centuries, one of the most dramatic and essential tendency is urbanization. No less striking is the tempo of change the four fold increase in urban population in these countries in a period of thirty years from 50.4 crores in 1970 to 202 crores by 2000 A.D. (*United Nations, Urban and Rural Population, New York, 1970*). Thus, the developing nations must come to grips with the problems and challenges of urbanization. The effects of this urban explosion are dramatically manifested in teeming slums in the centre of the city and mushrooming shanty habitats at its periphery. In most of the cities one forth to one half of the population lives in poverty and in intense deprivation of their basic needs. Shocking malnutrition is simultaneously a great contributor to and consequence of the urban poverty syndrome. (*Austin J.E., John Hpkins 1980*). The poverty level in India is defined in terms of the level of consumption considered essential for subsistence. The task force on projections of minimum needs and effective consumption set up by (*the*

*planning commission in 1977*) defined poverty line “as the midpoint of monthly per capita expenditure class having daily calories in take of 2400 per person in rural areas and 2100 per person in urban areas”. Urban poverty manifests itself in the proliferation of slums, rapid growth of informal sector, inadequate supply of civic services, under utilization of the labour force and so forth. (*Report of the National Commission on Urbanization, Government of India, 1989*). The basic poverty continuum demonstrates itself in low income, inadequate nutrition and basic services, limited or no education, low skills and no or inadequate income. Secondly, there is the environmental poverty continuum manifesting itself through insufficient service and housing, over-crowding, pollution, exposure to disease, low productivity, low income, inability to pay for adequate services and housing. And finally, there are the psychological dimensions, such as, insecurity, stress, depression, and deviant social behavior, lack of ambition or aspirations, lack of opportunity to demonstrate one’s productivity, and again low income and the consequent inability to ensure family security. (*Knutsson K.E.*)

The life of slums is basically a manifestation of poor quality, along with the economic and industrial development slums will continue to survive and more. The emergent of slums in the urban areas is the direct output of better economic opportunities accessible in the cities and towns. The demonstration effect of superior standard of living prevailing in the urban areas has also concerned not only the population from minor settlements, but also the rural migrants to almost all the major urban centers ensuing in the emergence of slums even in the sensitivity of the cities. These slums occurred due to various factors, namely, the shortage of developed land for housing, the prices of land being beyond in reach of urban poor; large effect of population, rural migration to cities in search of jobs; and insufficient provision of basic services and infrastructural services in the urban areas. (*Gurumukhi K.T. 2000.*)

The Urban poor in India according to many studies are those with a family income of Rs. 650-700/- a month, and who live in low income settlement without the amenities of adequate water, sewerage and health care. Overcrowding further improve the health environment and increase the probability of infectious diseases. The magnitude of the problems of housing, employment, water supply, transport, sanitation as well as the supply of other urban consumer, goods and facilities and the failing urban environment do activate off an alarm of crisis. (*Sharma R.C, 1991.*)

Slums and squatters are considered as problem areas for urban development in third world countries. They are illegally occupied houses and creating a irritation of environmental pollution and degradation of urban living situation. Environmentally, these areas are not fit to stay in our urban society, because squatters provide a situation of carelessness of social order, economic backwardness, and hard work of leading a life besides politically unconsciousness. Slums are the unclean urban areas where the drains are full of mud and refuse water of the houses, full of filth and flies, mosquitoes and insects abound. The roads are either unmetalled or full of potholes where even passers-by have to wade through muddy water and creating a sense of danger in walking even during day time what to talk of night. The slums have mostly no road lights, prevalence of service latrines and the road corners are full of heaps of garbage. Sometimes, the roaming of pigs and stray cattle's are creating trouble for the passers-by. Most of the houses are occupied illegally without land ownership and houses have been constructed without obtaining legal permit by the municipal authority. (*P. McAuslan, 1985*).

With the growth of urban population now days slums have created a panic for cities development. It has been a serious issue for the town planning not only in India but in Europe and North America as well slums are the marginal areas of cities where the service facilities are poor, people are illiterate, drinking water supply is miserably on the lowest ebb and the vice of underworld's predominate the scene. The study of slums and squatters is meaningful for the environmental modification and ameliorating the problems of urban areas for providing more amenities to the elling masses.

## **2. Urban Area and Slum, Emergence of Slums:**

Migration from the rural to urban areas has played a vital role in the urbanization process. Evidences from the developing countries show that the migrants are young and have only a few years of schooling, if at all very little previous work experiences and a small amount of capital to start their own business in the urban areas. Although shift to the urban center has opened up new opportunities for the migrant labour force, it is a fact that a vast majority of them do not have access to the minimum necessities of life like shelter, drinking water etc. beside other basic necessities like food and clothing.

In the urban areas, of the two sectors, formal and informal, the latter is important. First the accumulating body of empirical evidence suggests that not only is

the base of the formal sector is very small in the developing countries, but also that the rate of growth of employment in this sector is too low to generate enough jobs to absorb the addition to the urban labour force because of their low labour intensity. Second, many of the new to the job market are ill-prepared to be absorbed in the formal sector notwithstanding their expressed preference for a secure wage employment. Third, even though a number of jobs in the Government sector increased rapidly in many of the developing countries in the wake of independence, the rate of increase in Government employment has tended to slow down, if not stagnate, in the recent years.

As a consequence, many of the new entrants to the labour force choose to establish their own enterprise, however small it may be. There is a growing feeling in the developing countries in the recent years that the informal sector is not a transitory phase, but it is going to be a permanent feature of the urban economies of the third world. Further, the dependence on this sector for employment opportunities will grow over the years for the simple reason that no conceivable rate of growth of the formal sector will be sufficient to absorb the projected increases in the urban labour force.

The informal sector is an important source of employment in many developing countries, particularly in the urban areas; for example, about 60 to 70 percent in Kumasi city (Ghana) and 41 percent in Jakarta (Indonesia), of the working population are employed in the informal sector. The informal sector enterprises are typically located in or around the slum areas and the people engaged in the informal sector live in the slums. These slum dwellers forced to move from one place to another because they occupy land that doesn't belong to them. (*Sethuraman, S.V., Souza A.D., 1983*).

### **3. The Concept of Slum:**

Slum dwelling signifies as a common phenomenon of degrades life of urban dwelling itself. A slum represents a micro-habitat unit within a large framework of urban built up space. The presence of a slum as a part of urban habitat refers to a condition of defective physical, social and economic environment. It means physically poor quality sub-standard housing characterize slum areas which pose danger of health and life of slum dwellers. The socio-economic substandard denote an area of degenerated living “an abode of half starved, a place of poverty, wretchedness and vice, the house of racketeers and criminal” and so on.

Most urban centers of the worlds irrespective of location and size have invariably developed as slum. Slum emerges within a relatively big urban center and always trends to grows and multiply.

The concept of slum as given by *R.E. Dickinson* “as extreme condition of blight in which the housing is unfit as to constitute a menace to the health and the morale of the community.” It exists in all towns and owing to insufficient housing facilities it is mostly occupied by the poorest class of society and new coming migrants. These are the areas of high incidence of crime, mortality, illiteracy and disease. Due to extreme conditions of overcrowding slums and squatter settlement have proliferated in non-western cities, occupying about 10 to 80 percent of any available space illegally. Such de facto settlements are built within can in Algeria, reed in Bangladesh and mud and straw in India, Kenya and Tanzania.

The slums lack basic services and pose enormous risks of disease, fire and range of social problems. The causes for the growth of squatters are poverty, frustrated demand for housing, bulk migration of people from rural to urban areas for employment which serve the interest of the political-business elites and bad elements in the towns. The urban housing schemes are often very expensive for the poor.

#### **4. Slum Defined:**

To understand the perilous effects of slums and their intrinsic impact on human capital, it is imperative to know what a slum is like.

The definition, adopted by the *U.S.A. Housing Act of 1949*, declared that “slum may be said to include any predominantly residential area where the dwelling, which by reason of dilapidation, overcrowding, faulty arrangement of designs, lack of ventilation, light or sanitary facilities or any combination of these factors, are detrimental to safety, health and morals.”

According to *Gouder*, “Is an environment that lacks the basic amenities of a good living condition and is regarded as the worst form of human habitation.”

According to the report of the *United Nations on the Urban land Policy* “A slum is a building, group of buildings or area characterized by overcrowding, deterioration, insanitary conditions or absence of facilities or amenities which because of these conditions or any of them, endanger the health, safety or morals of its inhabitants or the community”

According to Cist and *Halbert* “slum is an area of poor houses and poor people. It is an area of transition and decadence, a disorganized area, occupied by human derelicts, a catch of the entire criminal for the defective, the down and out.”

According to *Websters new world Dictionary* “Slum is a populous area characterized by Poverty, poor housing etc.”

According to *Urban sociologist Bergel* conceives slums as “Area of substandard housing condition within city.”

### **5. Slums- A World Wide Phenomenon:**

Slum punctuate almost in every city of the world. This has become a universally accepted reality and an inevitable phenomena accompanying urban growth in all countries. Even in USA, which is understood as the most affluent society in the world, there also one finds urban slums and they are due to industrialization, urbanization, unprecedented influx of rural masses into the cities.

It is well realized that there is the ‘other America’ with its shocking conditions of substandard housing, poverty, ill health and hopelessness. In the USA 27 percent of 58 million occupied dwellings were shocks, hovels and torments, and 8.6 million were in deteriorating conditions. In short, 30 percent of the American families lived in sub-standard homes, many of which were in slums. These slums have been created due to the inflow of population from different parts of the world. Migration to USA began in 1914. It is recorded that during that year over 1.2 million people came in from different countries, such as, Mexico, Italy, Greece, Poland, Germany, and many Asian countries. They came in search of work, but many of them could not get suitable jobs. In fact, every city of America, whether in developed or developing areas has slums. But the problems in the developed areas are different from those in the developing areas of USA. The economic conditions in these slums are very depressing because of over population, congestion and ill-health. These areas unwittingly are predominantly inhabited by the poor, unskilled, uneducated labourers who do not own houses. Unemployment in these areas is very high. (*Mohammed N.*)

Even in Sweden, there are slums. It is estimated to be living in makeshift shantys known as ‘barng-barongs’ made variously of scrap tin, clap boards, sawali, corrugated iron and canvas. In Hongkong, where there are thousands of squatter huts, there is even class below the squatter groups called the ‘street sleeper’. In Singapore, 130000 people are living under squalid and unsanitary conditions in “altapkampongs” throughout the municipal areas. These people live in huts made in timber, attap, old

boxed or rusty corrugated iron etc. with primitive sanitation stand pipe watch and little of the elementary health requirements. (*Sigh S.D. and Pother K.P.*)

A careful understanding over the existence of the slum areas throughout the world shows that the populations of the cities have been increasing partly due to immigration from the rural areas in search of employment in the cities. The growth of metropolitan cities in India has been largely unplanned and haphazard and this can be seen from the fact that one-fifth of the total urban population live in slums or squatter settlements.

There are three main types of slums (*Bergal E.E., Desai A.R. and Pillai D., 1970.*)

- One is the original slum, and area which from the beginning consisted of unsuitable buildings. These sections are beyond recovery and need to be razed. The Mexican slum in Wichita is an example of an original slum.
- The second type consists of slums created by the departure of middle and upper class Families to other sections and subsequent deterioration of the area. An example is the south end slum in Boston.
- The third and most unpleasant type of slum is mainly a phenomenon of transition.

Once the area around a main business district has become blighted, physical and social deterioration spreads rapidly. This kind of slum teems with flop houses, provides accommodation for the destitute, houses of prostitution and speakeasies. It is populated by transients, tramps, vagrants, chronic alcoholics, batters, homeless men and habitual criminals. Its economic activities are carried out by proprietors of saloons and prostitutes. This type of slum clearly defies rehabilitation. Any town or city in India may be described as an example of this kind of slum. (*Rao P. Manohar, 1991*)

The basic characteristics of these slums are dilapidated and uniform housing structures, poor ventilation, acute over-crowding, faulty alignment of streets, inadequate lighting, paucity of safe drinking water, water-logging during rains, absence of toilet facilities, and non-availability of basic physical and social services etc. the living conditions in the slums are usually unhygienic and contrary to all norms of planned urban growth and an important factor in accelerating transmission of various air and water borne diseases. (*Census of India 2001, Orissa2001*).

The existence of ‘Urban Slums’ is one of the major problems faced in almost all the major cities/towns throughout the world including India.

#### **6. Slums Scenario in India:**

Some of the worst slums in the world can undoubtedly be found in Indian cities. Due to lack of proper town and country planning, cities have been chronically incapable of accommodating the ever increasing flow of migrants from the rural areas and small towns.

In the older metropolises like Mumbai, Kolkata and Delhi and Chennai, the slum has become a chronic reality; (*Slums in Mumbai are of 3 types.*)

1. The first type consists of single or multistoried buildings, built long ago as per, standards prevailing then and which today are dilapidated conditions. Every monsoon in Mumbai is invariably marked by the collapse of a few buildings of this type. The landlords of these buildings have presumably recovered their investment and much more from these buildings and they are today no more interested in them except for the rent they yield. The utter negligence of most the landlords in leaving these buildings in disrepair on the plea that are unable to spend money on repairing under conditions of fixed rent has left a vast mass of poor people in dilapidated or fast-deteriorating buildings which precariously service nature’s fury every year. In the kamathipura area, it was estimated in 1957 that 14 percent of the buildings deserved immediate demolition, 40 percent had a life of 10-15 years and 30 percent only 15-20 years. More than forty years have since then passed. Some buildings have collapsed and many are approaching a dangerous state. However, some work has been done in some spots by the Repair Board.
2. In the second type of slums semi-permanent structures both authorized and unauthorized types are found. Some of these consist of semi-permanent structures built of corrugated iron sheets. They are commonly known as ‘*patra*’ *chawals*. The Koliwada area in worli (Mumbai) is full of such single stored structures built well over a hundred years ago by fishermen.
3. The third type of slum is the hutment colony on the squatter colony, called “*jhoppad patties*”. These huts are built with an assortment of



materials consisting of hardboard, zinc sheets, flattened in post and gunny bags. Mud Hutment colonies are usually not seen in the city proper but in the outlying areas of the city. It is interesting to note that in some hutment colonies employees of the Municipal Corporation itself are mostly found. (*Desai A.R., and Pillai, S.D., 1990.*)

In Delhi, partition of the country brought homeless thousands from Pakistan and Today's Old Delhi is an extremely congested city dotted with slums. In Madras, there were 189 slums in 1933, and in spite of three decades of efforts to solve the problem, the numbers increased to 548 in 1961. In Pune and Ahmedabad slums are on the increase. Pune is fast developing with an expanding industrial sector and it is no wonder that slums too are on the increase there. In Ahmadabad, which is now a major industrial center, 15 out of 29 Municipal wards have slums. Over 54 percent of slum dwellers live in single room with 4 to 9 people. It is important to note that even the newly built Chandigarh has slums on its periphery. When the city was being built, the slums could not be cleared as those who lived in them were required for construction work. It was, therefore, decided to shift the slum population to the periphery of the city where lands were allotted to them on nominal rents. In these plots, Kaccha and pucca tenements came up, but what is worse, around these authorized plots several clusters of unauthorized tenements too sprang up (*Ibid*).

(*As According to Census 2001*), About 640 cities and towns in India, 26 states and union territories have reported the slum population, out of that the Andhra Pradesh has largest number of cities it is 77, Uttar Pradesh 69 cities, Tamilnadu 63 Cities and Maharashtra there are 61 cities with slum population

In India, Slum population has been reported from Twenty Six States and Nine Union territories, namely, Himachal Pradesh, Nagaland, Mizoram, Sikkim, Arunachal Pradesh, Manipur, Dadra & Nagar Haveli, Daman & Diu and Lakshadweep have not reported any slum population in their cities. The electronic data provides information on slums at following three levels.

The data **set I** provides the information on slum and urban population of cities/towns reporting slum relating to number of households, total population, population in 0-6 age group, literate population, Scheduled castes, Scheduled Tribes and workers, main workers, marginal workers and distribution of workers into four industrial categories namely Cultivators, Agricultural Laboures, Household Industry workers and Other workers by sex – India & State/Union territory.

The data **set II** gives town wise above information for 640 Cities/Towns reporting slums in 2001.

The data **set III** gives ward wise slum population and its characteristics of twenty seven cities having more than million populations in 2001.

### **7. Importance of the Study:**

- To understanding the responsible factors for the emergence and growth of slum huts in the study area.
- To get the actual status of streams and site specific background of slum of Pimpri Chinchwad urban area.
- The study will try to analyses and understand the different environmental problem in the slum areas of Pimpri Chinchwad urban area.
- Understanding the reasons for the less education, absence of amenities and home appliances in slum area of Pimpri chinchwad urban area.
- The studies also focus on the educational level of slum society in the area as education is the basic parameter in the all way progress of the society.
- Understanding the reasons of less annual income, occupational structure of the slum families of Pimpri Chinchwad urban area.
- To study is important for the information about the religion and caste status in slum of Pimpri Chinchwad urban area.
- The research will be focus on status of deterioration in the slum urban environment.

### **8. Review of Literature:**

Literature review is a collection of research publications, books and other document related to the defined problem.

According to Singh and De Souza (1976) “the slum and pavement dwellers can be said to be overwhelmingly poor rural migrants primarily from lower caste and disadvantaged communities who migrate to the city through kinship, caste and village net works in search of better economic opportunities.

Ratna N. Rao (1990) wrote an important book entitled “Social Organisation in An Indian Slum” She emphasizes on view of the life in slums and depicts them as the very sure of human existence where poverty and crime alone predominate.

The study of four cities of Baroda, Bhilwara, Sambalpur and Silguri Highlighted in the book ‘Basic services for urban poor’ by A. Ghosh, S. Ahmed, and S. Mitra (1995) specifically emphasized the extent and nature of community participation in managing urban basic services programmers. It has been a common finding that the thrust of urban growth has created pressure on the existing assets of the city, consequently impoverishing the city base. Rapid migration from inside and outside the respective states has over stressed the existing health, sanitary, environmental and educational facilities and services. The urban infrastructure that has been built slowly over several years has suddenly become inadequate for the city dwellers lowering per capita availability of services. The study has suggested for more effective utilization of the participatory approach.

Meera Bapat and Indu Agarwal (2003) reported the present’s extracts from interviews with slum dwellers, primarily women, in Mumbai and Pune, and discusses the conditions they cope with every day with regard to water and sanitation, and the ways these conditions have changed over time.

According to Gopal Bhargava (2003)The situation of slum – dwelling has become a serious challenge as housing problem has gone far beyond the reach of a poor man has been devoted to explain in “urban problems and urban perspectives” (page no. 212)

Ghosh S, Shah D. (2004) point out the nutritional status of slum children is worst amongst all urban groups and is even poorer than the rural average. Urban migration has not provided them salvation from poverty and under nutrition. Another distressing feature is the lack of any significant improvement over the years in this population. Most common causes of malnutrition include faulty infant feeding practices, impaired utilization of nutrients due to infections and parasites, inadequate food and health security, poor environmental conditions and lack of proper child care practices.

B. Hema and Shagufta Jamal (2004) wrote a book on “Environmental Perception of Slum Dwellers” which deals with Social, educational status of slum population and study the perceived consequences of various kind of pollution on the life of the dwellers.

L.N.P.Mohanty, Swati Mohanty (2005) wrote a book on “Slum in India” the growth of slum is a manifestation of the urban poverty; it has become imperative to raise the quality of life by creating favorable conditions to the achievement of shelter,

health, sanitation, education, employment opportunities and dispersed economic activities.

Rekha Sinha and U.P. Sinha (2007) entitled “Ecology and Quality of Life in Urban Slums” view to highlight the socio economic life of the urban society in terms of environmental pollution. It includes almost all aspects of urban life, living condition, food habits, psychological behavior, and dress material, ornaments types of recreation, musical instruments and arts, level of literacy, political life, caste conflict, infrastructural development and marketing environment.

According to Lee W Riley, Albert I Ko, Alon Unger and Miter Mayer G (2007) urban slums, like refugee communities, comprise a social cluster that engenders a distinct set of health problems.

The meaningful study for environmental modification & ameliorating the problems of urban slums has been elaborated in “The ecology & quality of life in urban slums: an empirical study” (page no. 97) written by- (Rekha sinha and Uday Prabash sinha, 2007).

Grace Bahalen Mundu, R.B. Bhagat (2008) focus on the living conditions of slum dwellers in Mumbai. Most of the slum dwellers in Mumbai lack the basic necessities of life.

Niharranjan rout (2008) concluded in their studies with the observation of Unhealthy environment, unhygienic living conditions, structurally inadequate housing, lack of civic facilities, hazardous working conditions and low level of socio-economic conditions are the key substantial number of problems related to health, housing, unemployment and social life.

R. Ramachandran (2009) entitled “Urbanization and Urban System in India” this book is an attempt to present the salient aspects of urbanization in India from a geographical point of view.

Pratima Singh (2009) in his research paper on “Sheltering Delhi’s slums”: a study of the different policies for slum development in the city are implemented by the various organizations involved and although the policies identify the interests of the slum dwellers and aim at providing them with as much comfort as possible, the realities of the implementation are often different from what is seen on paper. Understanding these policies and comparing them by means of certain parameters outlined, helped structure and break down the policies to their basics.

According to Mirsaeed Moosavi (2011) environmental Problems of slum and informal settlements in Tabriz, in recent years, almost all of the urban problems including poverty have been converging into Environmental issues and among different aspects of urban life leading to environmental issues, informal or Slum settlements have been much more problematic. Now, environmental health issues are some of the most Visible symptoms of the challenges facing informal and slum settlements. Sprawling slums, litter and polluted Waterways are prevalent in most urban slums, and health and development statistics quantify in some detail the massive impact of this situation on the quality of life of the population.

Henna Tabussum (2011) entitled “Slums in India” this book provides deep insight into various dimensions of issues relating to the drinking water and sanitation, poverty and slums in India, socio economic status of slum dwellers, cooperatives for improving living conditions in slums.

Asha A. Bhende and Tara Kanitkar (2011) the book of “The Principles of Population Studies” important work the study of population has gained in importance because of the increasing realisation that an understanding of the processes underlying population changes, the factors associated with them and their consequences.

Biplab Das, Utpal Khara, Pradip Giri and Aditya Bandyopadhyay (2012) point out the causes of emergence of slum are rapid growth of industrialization creates enormous employment opportunity. It attracts the lower income peoples and the unskilled labours from the rural area. The high rate of migration from rural area to the urban sector formulated slum area, because these men are unskilled labours to industries.

Ghuncha Firdaus (2012) the paper concludes with policy-oriented discussion of the relationship between Urbanization, increasing number of slums and health challenges before the developing nations.

Rashmi Bansal and Deepak Gandhi (2012) wrote a book on “Poor Little Rich Slum” social, economical, environmental, educational, and occupational condition of slum with help of interviews and photographs.

Dr. Abir Bandyopadhyay, Vandana Agrawal (2013) this leads to the degradation of urban environmental quality and sustainable development especially in the metropolitan cities. The problems faced by the people living in the urban areas of India have become major concerns for the government. Slums are considered to be the major issue within many urban areas; particularly problems related to transportation,

population, health and safety. Considering today's poor urban environmental quality in India, the majority of families affected by urban development projects are located in slum areas which are under consideration for resettlement and/ or rehabilitation.

Shidratul Moontaha Suha, Md. Reazul Haque (2013) investigated the reason behind carrying poor health and its future Impacts on adolescent girls, who lives in urban slums.

According to Dr. Krishna Gowda, Dr. Chandrasekhar M. N, Prof. Sridhara M. V., Dr. Hemalatha B. N. (2013) slums and squatter settlements are characterized by a gross deficiency of basic services such as proper housing, provision and Supply of safe potable water, sanitation facilities such as latrines and disposal of human excreta, drainage of dirty water, paved Roads including accessibility etc. Often, even rain water does not get drained off from their regions. In the absence of these Facilities, the quality of life in slums and squatter settlements is highly miserable and these dirty areas.

According to Ms. Hina (2013) slums are considered as illegally occupied houses and creating a nuisance of environmental pollution and Degradation of urban living conditions. Slum dwellings signify as common phenomena of degraded life of urban dwelling itself occupied by urban poor. The presence of slum as a part of urban habitat refers to a Condition of defective physical, social and economic environment.

Swadesh Kumar, VenkateshDutta, Sadhana Jain. (2014) said that growth of such slum clusters is a major problem which is further exacerbated by increasing urban development and deficit of affordable housing. There are many challenges in the task of making cities free of slums and improve the situation in existing slums.

S. M. Pore and S. D. Randive (2014) “A study on environmental sanitation, and personal hygiene among the slum Area in Solapur city, Maharashtra” this paper indicates that environmental sanitation through inhabitants is of an average degree, but not very Much satisfactory from the hygiene point of view. Lack of water and poor sanitation is one of the many challenges Faced by poor urban populations.

According to Diganta Kumar Phukan (2014) investigate the level of some basic amenities such as housing, Sanitation system and water facilities etc. In the study it was found that these aspects of their livelihood are poor which generates several Problems especially it degrades urban ecology

A Few of the studies are piecemeal attempts without any integrated understanding of the whole issue. Even in micro-level studies focus was laid on certain individual problems. In depth studies in the field have been rare.

### **9. Hypothesis:**

The basic foundation of research work is based on the hypothesis. It is a pre-supposition of research work to be carried out on a particular problem. The systematic study of the present problem will be carried out on the basis of following hypothesis.

**“Slums in cities are an important human resource to urban areas and are also a cause of deteriorating quality of urban environment”.**

The Hypotheses focuses on aspects related to slum Population by analyzing the human resource quality and the deterioration of environment due to occurrence of slums.

Generally City Development Planning (CDP) & Urban Environmental management systems (UEMS) expected urban areas should be with clean environment maps, Utilization of all land in proper way, less environmental risks, proper distribution of population densities.

### **10. Aims & Objectives of Study:**

The present study of slums in Pimpri-Chinchwad urban area will be based on following objectives.

1. To locate the slum pockets in Pimpri-Chinchwad urban areas.
2. To analyse and assess the geographical set-up of slums in the Pimpri-Chinchwad urban area.
3. To Analyse and study social, economical and population attributes of slums in Pimpri Chinchwad urban areas.
4. To study the effects of slums on urban environment of Pimpri chinchwad urban areas.
5. To suggest measures for the city development plan by considering all the effects of slums in Pimpri-Chinchwad urban areas.

### **11. Limitations of the study:**

1. The study is limited to the Pimpri Chinchwad geographical urban area.
2. The study deals mainly with the present scenario of the slum households.

## 12. Methodology:

The study focused on the geographical assessment of slum, social status of slums, economic status of slums and slum environment and associated problems in urban slum of Pimpri Chinchwad urban area.

### 12.1. Coverage:

The survey made by Pimpri Chinchwad Municipal Corporation in 2001, shows that they were about seventy one slum in the Pimpri Chinchwad Municipal Corporation area, out of these sixty one were declared slums and ten were undeclared slums by the Pimpri Chinchwad Municipal Corporation (PCMC). All these slums were classified on the basis of ownership of land where slum is located. The details of same are as follows.

**Table.1.1:** Slums in PCMC Area with Respect to Ownership of Land.

Ownership of Land	Declared	Undeclared	Total
PCMC	07	00	07
PCNTDA	09	00	09
MIDC	15	00	15
GOVERNMENT	15	00	15
PRIVATE	15	10	25
TOTAL	61	10	71

*Source: Reported of Pimpri Chinchwad City Development Plan 2006-2012.*

### 12.2. Sample Slums and Sample Size:

All these slums respectively located on different major region in PCMC these are, In Akurdi, Chinchwad, Wakad, Bhosari, Nigadi, Pimpri, Pimpri-Waghere, Dapodi, kiwale. All these seventy one slums of the two categories with respect to ownership of land. For the survey, 28 typical slums, two each from the categories as well as with respect to ownership of land, respect to location. Viz. declared and undeclared as described above were sampled.

Out of total huts & population 1087 huts from the 28 sample slums area selected. For each sample slum, a specified number of sample huts which was proportional to the total number of huts in each slum are select. The selection of slum pockets was made on the basis of stratified random sampling methods.



**Table.1.2:** Details of Sample Huts in Pimpri Chinchwad urban area.

Sr. No.	Name of Region	Name of Slum Pockets	Land Ownership (Stratum)
1	Akurdi	Jaymalhar Nagar	PRIVATE
		Nagesh Nagar	P.C.N.T.D.A.
		Ajanta Nagar	M.I.D.C.
2	Chinchwad	Anand Nagar	PVT. +RLY.
		Saibaba Nagar	PVT. +RLY.
		Udyog Nagar	P.C.M.C.
		Santosh Nagar	PRIVATE
3	Wakad	Kalakhadak	GOVT.
		Tapkir Nagar	PRIVATE
		Annabhau Sathe Nagar	P.C.N.T.D.A.
4	Pimpri	Ganesh Nagar	GOVT. + PVT.
		Ramabai Nagar	GOVT.
		Link Road	P.C.M.C.
5	Bhosari	Sanjay Nagar Wakhar	RAILWAY
		Gavali Nagar Vasahat	M.I.D.C.
		Hirabai Landage Chawl	PVT. +RLY.
		Khandewasti	P.C.N.T.D.A.
6	Pimpri- Waghere	Vithal Nagar	GOVT.
		Yashwant Nagar	PRIVATE
		Star Rubber Morewadi	M.I.D.C. + PVT.
		Annasaheb Magar Nagar	M.I.D.C.
		Nashik Phata	GOVT.
		Ratilal Bhagwandas	PRIVATE
7	Dapodi	Limbore Chawl	PRIVATE
		Anandwan	RAILWAY
		Omkar Nagar	PVT. +RLY.
8	Nigadi	Sharad Nagar	P.C.N.T.D.A.
9	Kiwale	M.B. Camp Kiwale	PRIVATE

*Source: Own Sample Surveyed.*

Following is the scheduled system. which was applied for this research work.

### 12.3. Reference Works:

Books and Journals, Article, Reports, various website and News papers, Google and Wikimapia are the references used to the get information and the basics of the selected topic.

### 12.4. Primary Data Sources:

The field visits, Observations, filling up the questionnaires, interviews, field survey of slum- pockets by surveying instruments for zone demarcation and Photographs are the basic source of primary data.

The details of methodology of these primary data sources are as follows.

#### **12.4.1. Questionnaire I:**

This questionnaire includes the questions for gathering information of, name of slum, structure of road, length and width of road, different site of slum location and type of gutter or drainage system. This questionnaire was used to get the information of selected slum region.

#### **12.4.2. Questionnaire II:**

This questionnaire includes the questions for getting the information of head of the family, staying or living duration in hut, no. of doors and windows of huts, electricity facility, garbage collection system, fuel objects and system and amenities in slum huts. This questionnaire was used to get the information of household and huts.

#### **12.4.3. Questionnaire III:**

This questionnaire includes the questions for gathering information on personal profile such as, age, sex, religion and caste, education, occupations, monthly and annual income of slum families and health status of slum population such as, diseases, hospital services. This questionnaire was used to get the data of the selected slum huts in particular region.

GPS instrument was used to collect the data related latitude, longitude and altitude of slums of Pimpri Chinchwad urban area. which were selected for the study.

The photographs of small streams, river basin, garbage collection system, gutter, water taps, educational center of nearby slum, small shop near the slum, occupation of slum population, slum area, huts, hut structure and land, water, and soil pollution of different location of slum in Pimpri Chinchwad urban area, were also been taken with help of thirteen mega pixel camera of Sony company.

The data was collected by the researcher on the pre decided schedule which includes by the devoting there personal interview of each person or family member in selected slum huts. Each interview was taken 30 to 40 minutes of time. The total process of collecting primary data was completed within 10 months of time.

The focus of getting the primary data was on the objectives and hypothesis of the reach problem. Most of the family member of slum huts helped us for the interview and provided the best response for all questions but somewhere little problem are faced with their local organisations.

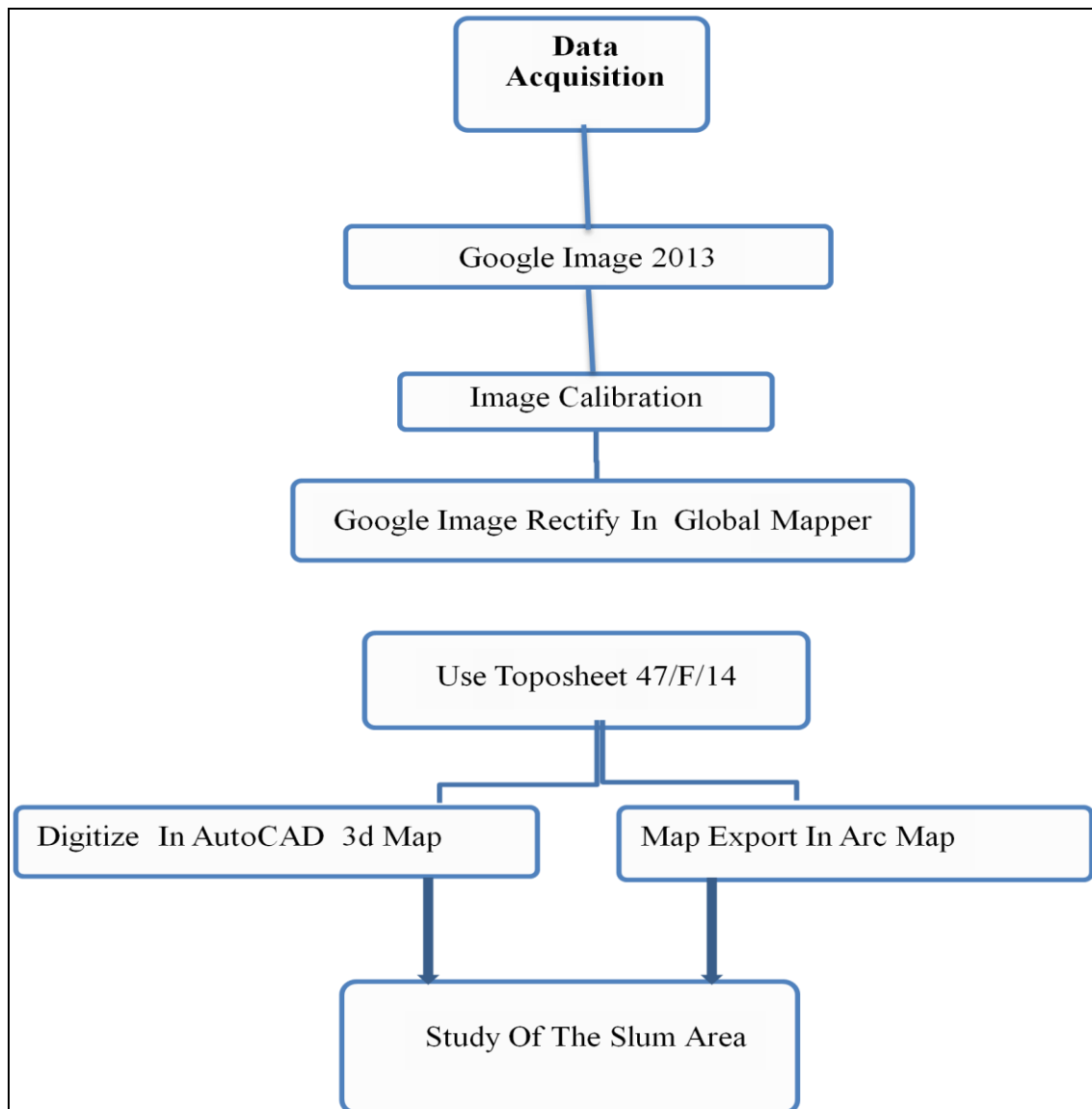
**12.5. Secondary Data Sources:**

S.O.I. Toposheet, Tahsil office Reports, Census Handbook, Record of Town Planning Office, Record of Pimpri Chinchwad Municipal Corporation Office, Paper cutting and PCMC web sites are the secondary data sources for this study.

**12.6. Laboratory Component:**

The laboratory work includes preparation of base map, statistical, cartographic techniques & other required maps with the help of Arc- GIS, Surfer-8 version, Global Mapper-14 version, Adobe Photoshop, to use of GPS and Google earth software for determined the area of slum huts in Pimpri Chinchwad urban area and details of this has been shown in Table No. 1.2.

**Figure No.1.1:** Flow chart of Methodology of Laboratory Component.



*Source: Own Sample Surveyed.*

**12.7. Analysis of Data:**

The data collected through primary and secondary data sources has been analysed with the help of statistical tools.

Some of the formulas/ mathematical equation which were used for this statistical analysis were given bellow.

**12.7.1. Frequency:**

The number of observations falling within particular cell, range, group and categories is called as frequency.

**12.7.2. Percentage:**

$$\text{Percentage (\%)} = \frac{\text{Class frequency}}{\text{Total frequency}} \times 100$$

**12.7.3. Slope:**

$$\text{Slope} = \frac{\text{Vertical distance}}{\text{Horizontal distance}} \times 100$$

**12.7.4. Child Dependency Ratio:**

$$\text{CDR} = \frac{\text{Total no. of children of below 14 year age group}}{\text{Total population in between 15- 59 year age group}} \times 100$$

**12.7.5. Aged Dependency Ratio:**

$$\text{ADR} = \frac{\text{Total no. of population above 60 year age group}}{\text{Total population in between 15- 59 year age group}} \times 100$$

**12.7.6. Dependency Ratio:**

$$\text{DR} = \frac{\text{Total no. of children below 14 year+ above 60 year age group}}{\text{Total population in between 15- 59 year age group}} \times 100$$

**12.7.7. Male Labour Force Participation Rate:**

$$\text{MFPR} = \frac{\text{Total no. of male worker in between 15 to 59 year age group}}{\text{Total no. of male population}} \times 100$$

**12.7.8. Female Labour Force Participation Rate:**

$$\text{FFPR} = \frac{\text{Total no. of female worker in between 15 to 59 year age group}}{\text{Total no. of female population}} \times 100$$

**12.7.9. Labour Force Participation Rate:**

$$\text{LFPR} = \frac{\text{Total no. of worker in between 15 to 59 year age group}}{\text{Total no. population}} \times 100$$

**12.7.10. Mean (Average):**

$$\text{Mean (X)} = \frac{\sum X_i}{N}$$

Where as,

- $\sum X_i$  : Sum total of observed values.
- N : No. of total observations.

### 12.7.11. Chi-Squared ( $\chi^2$ ):

Chi-squared value for  $i \times j$  table:

$$\chi^2 = \frac{\sum (O_{ij} - E_{ij})^2}{E_{ij}}$$

Where as,

i: represents row number.

j: represents column number.

$O_{ij}$ : Observed frequency in  $i^{\text{th}}$  row and  $j^{\text{th}}$  column.

$E_{ij}$ : Expected frequency in  $i^{\text{th}}$  row and  $j^{\text{th}}$  column.

Where as,

$$E_{ij} = \frac{\text{Row total} \times \text{Column total}}{\text{Total of all observed frequency}}$$

The data collected from the different sources will be processed and the proportions and percentage will be tabulated and certain cartographic techniques will be applied to represent the data as per requirements through graphs, charts and bar graphs. The represented data will be interpreted and analyzed to find out results and conclusions.

### 13. Arrangement of Text:

The first chapter introduces the concept of urban and slum, emergence of slum, definition of slum, slum scenario in India, important of the study, review of literature, hypothesis, aims and objectives of the study and methodology.

The second chapter covers the historical background of study area, location of study area, the location of selected slum pockets with the help of Google images in Pimpri Chinchwad urban area, classification of slum on the basis of site characteristics, surrounding functions and land ownership of the study area, geographical assessment and situational background of the study area with the help of natural aspects (geology, relief, drainage and climate) and human aspects (urban settlement, transport network and connectivity, industrial cluster, street light, administrative blocks and zones) and population of the study area.

The third chapter studies the economic status of slum population with the help of annual income of slum families, home appliances, occupational status also social status of slum population with the help of caste status, religious status. Another study of related to slum population as a resource with the help of educational status, age group wise distribution of population, dependency ratio, crude activity rate or labour force participation rate of slum population of Pimpri Chinchwad urban area.

The fourth chapter evaluates the deterioration of urban slum environment and associated health problems with help of region wise and slum wise status of garbage collection system and tools, water supply system, latrine facility, area and location of dirty gutter or drainage system and associated health problems.

The fifth chapter deals with the summary, finding, strategy for slum development, and conclusion base on the hypothesis and objectives of study area.

Finally the photographs of various site of slum in Pimpri Chinchwad urban area, bibliography, webliography, abbreviation, glossary and appendix for the study.

## Chapter II

### **THE LOCATION, GEOGRAPHICAL ASSESSMENT AND SITE SPECIFIC BACKGROUND OF STUDY AREA.**

1. Introduction.
2. Historical Back Ground of Study Area.
3. The Location of Study Area.
4. The Location on Google Images of Selected slums pockets in Pimpri Chinchwad urban area.
  - 4.1. Akurdi Region.
    - 4.1.1 Ajanta Nagar.
    - 4.1.2 Nagesh Nagar.
    - 4.1.3 Jay Malhar Nagar.
  - 4.2. Chinchwad Region.
    - 4.2.1. Sai baba Nagar.
    - 4.2.2. Udyog Nagar.
    - 4.2.3. Anand Nagar.
    - 4.2.4. Santosh Nagar.
  - 4.3. Wakad Region.
    - 4.3.1. Kalakhadak.
    - 4.3.2. Tapkir Nagar.
    - 4.3.3. Annabhau Sathe Nagar.
  - 4.4. Pimpri Region.
    - 4.4.1. Ganesh Nagar.
    - 4.4.2. Ramabai Nagar.
    - 4.4.3. Link Road.
  - 4.5. Bhosari Region.
    - 4.5.1. Gavali Nagar.
    - 4.5.2. Sanjay Nagar Wakhar.
    - 4.5.3. Hirabai Landage Chwal.
    - 4.5.4. Khandewasti.
  - 4.6. Pimpri Waghere Region.



- 4.6.1. Star Rubber Morwadi.
- 4.6.2. Yashwant Nagar.
- 4.6.3. Vittal Nagar.
- 4.6.4. Annasaheb Magar Nagar.
- 4.6.5. Nashik Phata.
- 4.6.6. Ratilal Bhagwan Das.
- 4.7. Dapodi Region.
  - 4.7.1. Limbore Chwal.
  - 4.7.2. Anandwan.
  - 7.3. Omkar Nagar.
- 4.8. Nigadi Region.
  - 4.8.1. Sharad Nagar.
- 4.9. Kiwale Region.
  - 4.9.1. M. B. Camp.
- 5: Classification of slums in Pimpri Chinchwad urban area.
  - 5.1: Classification of slums on the basis of site characteristics.
  - 5.2: Urban functions & services in the proximity of slums.
  - 5.3: Classification of slum on the Basis of Land Ownership encroachments.
- 6. Geographical assessment and site specific background of study area.
  - 6.1. Assessment of Natural aspects in study area.
    - 6.1.1. Geology of study area.
    - 6.1.2. Relief of study area.
      - 6.1.2.1. Akurdi Region.
      - 6.1.2.2. Chinchwad Region.
      - 6.1.2.3. Pimpri Region.
      - 6.1.2.4. Wakad Region.
      - 6.1.2.5. Bhosari Region.
      - 6.1.2.6. Pimpri Waghare Region.
      - 6.1.2.7. Dapodi Region.
      - 6.1.2.8. Nigadi Region.
      - 6.1.2.9. Kiwale Region.
    - 6.1.3. Drainage of study area.
      - 6.1.3.1. Akurdi Region.
      - 6.1.3.2. Chinchwad Region.

6.1.3.3. Wakad Region.

6.1.3.4. Pimpri Region.

6.1.3.5. Bhosari Region.

6.1.3.6. Pimpri-Waghare Region.

6.1.3.7. Dapodi Region.

6.1.3.8. Nigadi Region.

6.1.3.9. Kiwale Region.

6.1.4. Climate of study area.

6.2. Assessment of Human aspects in study area.

6.2.1. Urban Settlement of study area.

6.2.2. Transport Network and Connectivity of study area.

6.2.3. Industrial Clusters of Study area.

6.2.4. Street Lighting of Study area.

6.2.5. Administrative Blocks and Zones of Study area.

7. Population of Study area.

## **THE LOCATION, GEOGRAPHICAL ASSESSMENT AND SITE SPECIFIC BACKGROUND OF STUDY AREA**

### **1. Introduction:**

Pimpri Chinchwad urban area is located at west side of Pune city and it is 160 km far southeast ward from the Mumbai. Pimpri-Chinchwad is major industrial center of Pune region and also entire of the country. This has largely developed during the last four decade. Pimpri Chinchwad is a relatively newly developed urban area of Pune city. Pimpri was basically established as a centre for refugees from Pakistan. Industrialization in Pimpri area commenced with the establishment of Hindustan Antibiotics Limited (H.A.) in 1956. The establishment of the Maharashtra Industrial Development Corporation (MIDC) in 1961-62 considerably facilitated industrial development in the area. The establishment of large-scale core industries has led to the growth of ancillary and small-scale industries in and around this industrial belt. With each passing year, the landscape saw significant changes, long stretches of farmland giving way to clusters of enclosed factory campuses. This place, located at the center of the city, holds one of the biggest industrial centers in Asia. The place is home for world renowned companies like Bajaj-Auto, Bajaj Tempo, Telco and Kinetic. Three rivers Mula, Mutha and Pawana, cover the region in three directions and even meet here.

### **2. Historical Back Ground of Study Area:**

Pimpri Chinchwad is widely famous industrial city which is also recognized as Detroit of the East with the presence of many national and multinational automobile companies. The Pimpri Chinchwad urban area is formed with integration these city is the like Pimprin Chinchwad, Bhosari, Akurdi and so on. Blessed with rich cultural heritage and history, Pimpri Chinchwad is the birthplace of many freedom fighters like Chapekar and Halbe. Shri. Chapekar has taken active part in freedom struggle against oppressive British rule. He was hanged for the assassination of the infamous British officer Walter Charles Rand who had caused distress among the masses and committed atrocities in the Plague hit city of Pune. A monument dedicated to Chapekar brothers has been erected at the centre of the town. This township is also the birthplace of Ganesh devotee & Saint Morya Gosavi whose holy tomb is located at Chinchwad. Two thousand years ago, the township was ruled by King Bhoj. The

capital of his erstwhile empire was Bhojapur, which in present day is known as Bhosari. The Maharashtra Industrial Development Corporation (MIDC) has its base in Bhosari. It is blessed with salubrious climate all around the year. Excavated by Archaeologists, the 2000 year old 'Artist temple' and the "Artist Mahal" situated at Bhosari or the erstwhile Bhojapur is one of the monuments of interest in the township. King Bhoj is known for organization lot of cultural events here. The artists performing at the Artist Mahal had their residence three kilometers away from the main city. During excavation of the city, archaeologists have also discovered many artifacts like pots and other equipments, which date back to 200 A.D. The village of Pimpri Chinchwad had an entrance gate of 14 feet high. whose existence has been noted in 1885 Bombay gazette.

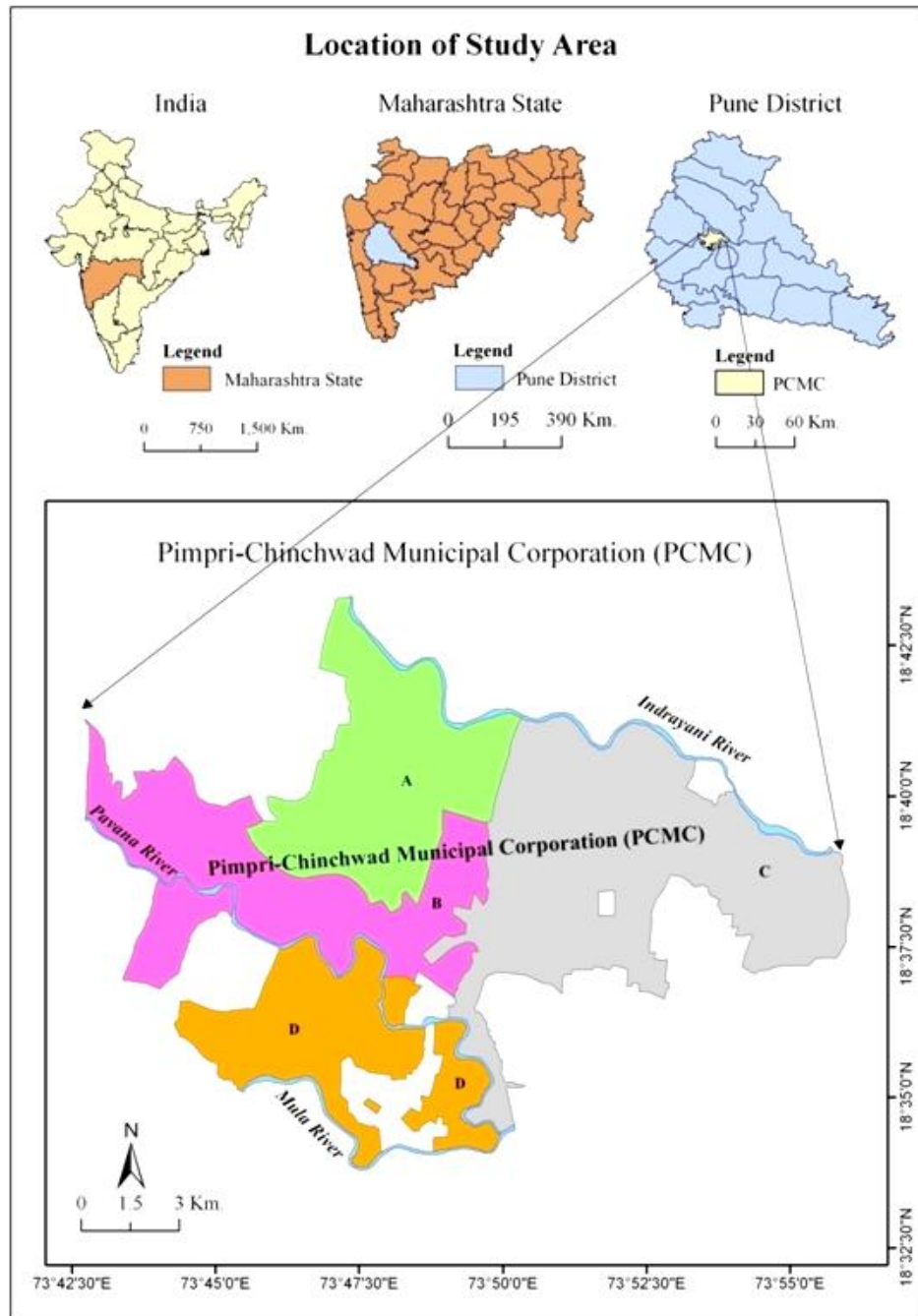
The township of Pimpri Chinchwad was also a part of the Yadav Dynasty between AD 850 to 1310. Many sculptures of people who died in wars relating to this ancient past have been found. Tourist can visit ancient temples of lord Khandoba, Mhasoba, and veer Chandoba. Bhosari village has a history dating to Gautam Buddha's era. Other places of interest in Pimpri Chinchwad is Khandoba Mal, where is a temple of lord Khandoba. Every year Lakhs of pilgrims visit the temple town of Alandi near Bhosari, and pray at the Samadhi (Tomb) of most revered Saint Dnyaneshwar. Pimpri Chinchwad has a many number of lord Ganesh devotees. People from all over India come to visit the tomb of the great priest and Ganesh devotee, MorayaGosavi. A folk tale about Morya Gosavi mentions that Two Ganesh devotees Vaman Narayan and Bhat Shaligram, natives of Bidar village in Karnataka state came to Morgaon, a pilgrim center in Maharashtra in 1330 with their wives. At Morgaon on the bank of a river, BhatShaligram worshipped a holy tree dedicated to lord Ganesh. Within a year he was blessed with a son. He named him Morya. One day Morya became critically ill and didnot recover for a long time. His parents were worried and prayed to Lord Ganesha for Moraya's wellbeing and good health. During this period there was a priest who treated Morya and saved his life. Later the priest (Gosavi) gave preaching to Morya and stayed at NayanBharati Chinchwad where he subsequently took Samadhi (went into tomb). Since then the Bhat family including Moraya came to be known as Gosavi. Morya Gosavi worshiped Lord Ganesh (Moreshawar) at Morgaon. He attained and realised the presence of Lord Morya in himself. Later due to hindrance in his worship he left Morgaon and started worshipping Lord Ganesh at a jungle near Tathwade near Chinchwad. On

chaturthii.e every fourth day after full moon he used to visit Theur. On the request of Lord Ganesh devotees from Chinchwad, MoryaGosavi started worshipping at the bank of the Pavana River. MoryaGosavi got married in the year 1470 to a girl Uma from Tathwade village in Chinchwad. He always used to travel to Theur, Ranjangaon and Chinchwad to worship Lord Ganesh. In the year 1481 he was blessed with a son. He named him Chintamani. Later on, this boy became famous as great devotee of Lord Ganesh and Saint, the elder Chintamani Maharaj. MoryaGosavi was devotee all his life; he dedicated his life towards devotion of Lord Ganesh. His wife Umabai died in the year 1556 and his Guru Shree NayanBharati undertook Samadhi. Moraya Gosavi felt that he had completed his life work and in the year 1556 decided to take Samadhi (go alive in a tomb). Emperor Humayun the Mugalrular at Delhi during his exile at Gujarat came to know about the popularity and devotion of MoryaGosavi. Emperor Humayun pleaded him to save him from his plight. Morya Gosavi arranged for safe passage of the king to Kabul. Soon, Humayun's fortunes changed and he became Emperor of Delhi. As a token of gratitude the Emperor sent gifts to Morya. This incident has been noted in a history book written by Parasnis and Martin called “Sanads and Letters of Humayun” (*pcmc web site*).

### **3. The Location of Study Area:**

Pimpri Chinchwad lies between 18° 35' North to 18° 42' North latitude and 73° 42' East to 73° 56' East longitude with an area covers 177.3 km<sup>2</sup> composed of 105 general electoral wards According to 1997 which come under 4 divisional offices of Pimpri Chinchwad Municipal Corporation. The city of Pimpri-Chinchwad is situated near the western margin of the Deccan Plateau on the leeward side of the Sahyadri ranges and Western Ghats, 570 mt. (1,870 ft) above sea level, on the banks of the rivers Mula, Pawana and Indrayani. The city is located 18°37'0” North Latitude and 73°48'0” E Longitude. Out of major settlement of Pimpri Chinchwad urban area, Pimpri, Chinchwad, Dapodi, and Nigadi are located on the bank of Pawana river and also located on the old Pune Mumbai highway trade and are also connected with electrified Pune Mumbai railway line track. Other urban area in Pimpri Chinchwad urban area is located on hill slope or hillock and small plateau areas. (*City Development Plan Report of PCMC, 2006-2012*)

**Figure No.2.1:** The Location of Study Area.



*Source: GPS Surveyed by Researcher.*



#### **4. The Location on Google Images of Selected slums pockets in Pimpri**

##### **Chinchwad Urban Area:**

To get the clear understanding of every selected slum zone and slum pockets the every zone was shown with separated Map and Google images of respective slum pockets. Following information clears the location of selected slum region (Map) and slum pockets (Google images).

##### **4.1. Akurdi Region:**

This region is located at northern side of the city on  $18^{\circ} 40'$  North Latitude and  $73^{\circ} 47'$  East Longitude. Height from mean sea level is 575mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line. It is relatively developed area with official help center and most industries are settled in this region.

##### **4.1.1 Ajanta Nagar:**

This Slum is located at Northern side of the Akurdi region on  $18^{\circ} 39'45''$  North Latitude and  $73^{\circ} 47' 30''$  East Longitude. Height from mean sea level is 604mt. Some industrial units are developed in this region like Thermax Industries it is situated at southern side and Talawade is situated at northern side of this slum.

##### **4.1.2 Nagesh Nagar:**

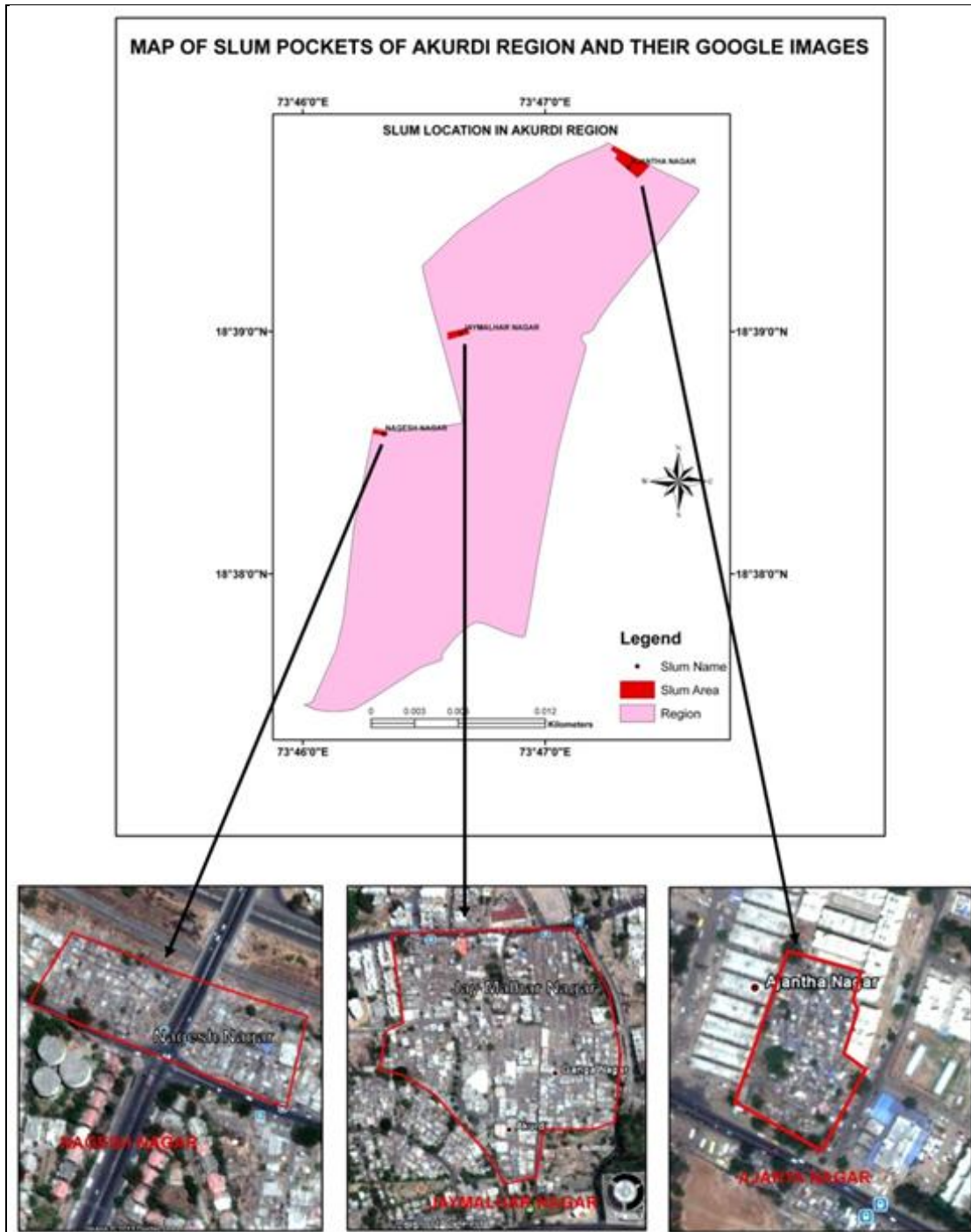
This Slum is located at Western side of the Akurdi region on  $18^{\circ} 38'39''$  North Latitude and  $73^{\circ} 46' 12''$  East Longitude. Height from mean sea level is 590mt. The railway line (Akurdi railway station) on northern side of this slum and Chinchwad region is situated at southern side of this slum.

##### **4.1.3 Jay Malhar Nagar:**

This Slum is located at Western side of the Akurdi region on  $18^{\circ} 39'06''$  North Latitude and  $73^{\circ} 47' 14''$  East Longitude. Height from mean sea level is 588mt. Old Mumbai- Pune highway is western side of this slum and Khandoba Temple of the northern side of this slum.



Figure No.2.3: The Location on Google Images of Akurdi Region.



Source: GPS Surveyed by Researcher.

## **4.2. Chinchwad Region:**

This region is located at western side of the city on 18<sup>0</sup> 38' North Latitude and 73<sup>0</sup> 48' East Longitude. Height from mean sea level is 570mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line. It is relatively developed area with official help center, educational services, trade center, transport connectivity and most industries are settled in this region such as, Telco Industry, Bajaj Industry. Hospitals facilities also developed in this region such as, Lockmanya Hospital, Birla Hospital.

### **4.2.1. Sai baba Nagar:**

This Slum is located at Western Side of Chinchwad region on 18<sup>0</sup> 38'40" North Latitude and 73<sup>0</sup> 47' 37" East Longitude. Height from mean sea level is 582mt. It is near to Mumbai-Pune railway line.

### **4.2.2. Udyog Nagar:**

This Slum is located at Center part of Chinchwad region and north east side of sai baba Nagar slum area on 18<sup>0</sup> 38'58" North Latitude and 73<sup>0</sup> 47' 30" East Longitude. Height from mean sea level is 578mt. It is close to the Mumbai-Pune railway line.

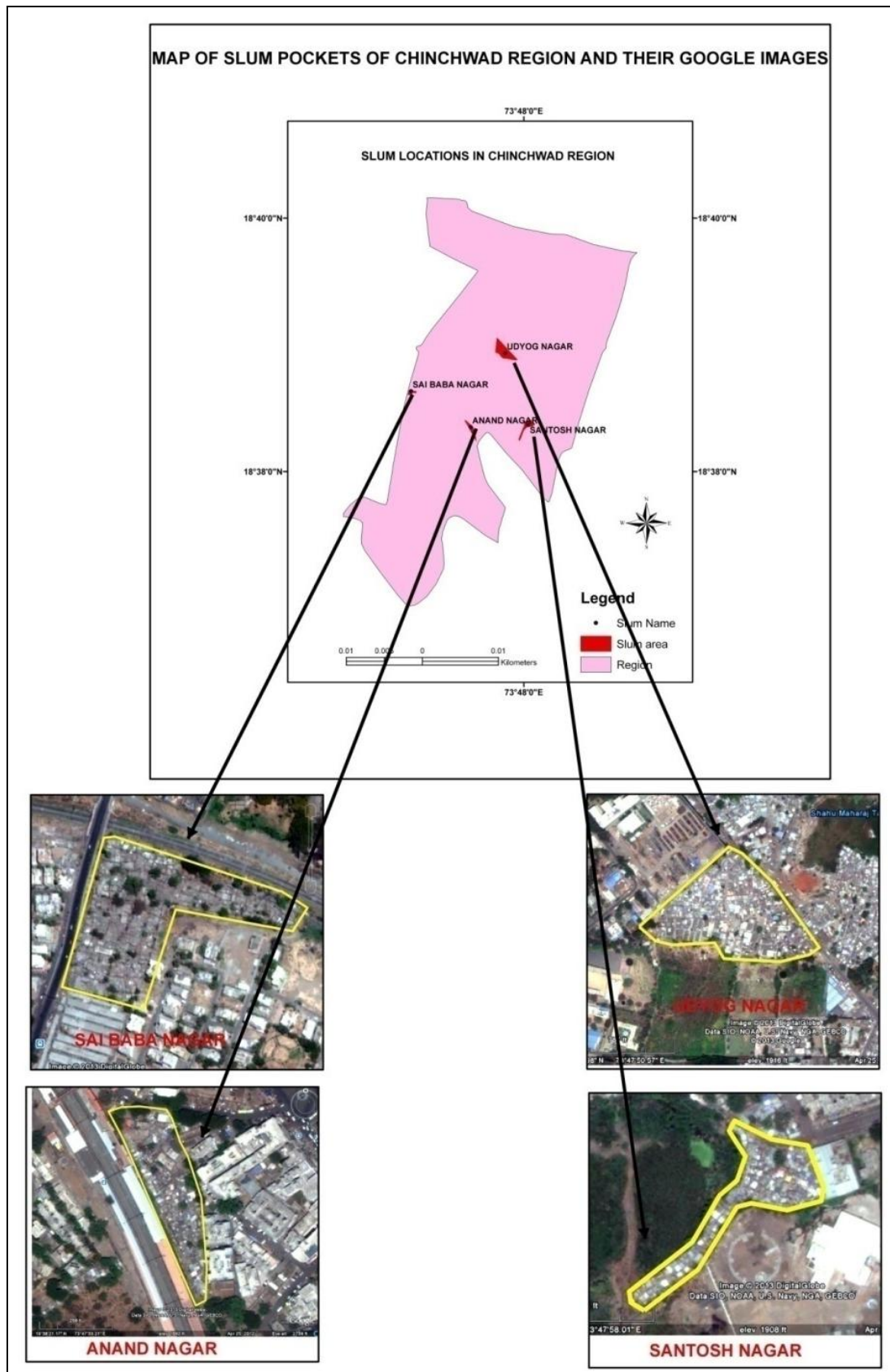
### **4.2.3. Anand Nagar:**

This Slum is located at Northern side of Chinchwad region and western side of Santosh Nagar slum area on 18<sup>0</sup> 38'26" North Latitude and 73<sup>0</sup> 47' 73" East Longitude. Height from mean sea level is 583mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line.

### **4.2.4. Santosh Nagar:**

This Slum is located at south east side of Chinchwad region and east side of Anand Nagar slum area on 18<sup>0</sup> 38'25" North Latitude and 73<sup>0</sup> 47' 59" East Longitude. Height from mean sea level is 577mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line.

Figure No.2.4: The Location on Google Images of Chinchwad Region.



### **4.3. Wakad Region:**

This region is located at western side of the city on 18° 36' North Latitude and 73° 45' East Longitude. Height from mean sea level is 580mt. It is also close to Mumbai-Bangalore Express Highway and it is relatively developed area with educational services, trade center and transport connectivity are settled in this region such as, IBMR Institute, Indira College, D. Y. Patil College, and other educational Branches.

#### **4.3.1. Kalakhadak Wakad:**

This Slum is located at North West side of Wakad region on 18° 36' 26" North Latitude and 73° 45' 18" East Longitude. Height from mean sea level is 588mt. It is also close to Mumbai-Bangalore Express Highway and close to Indira College Educational Campus.

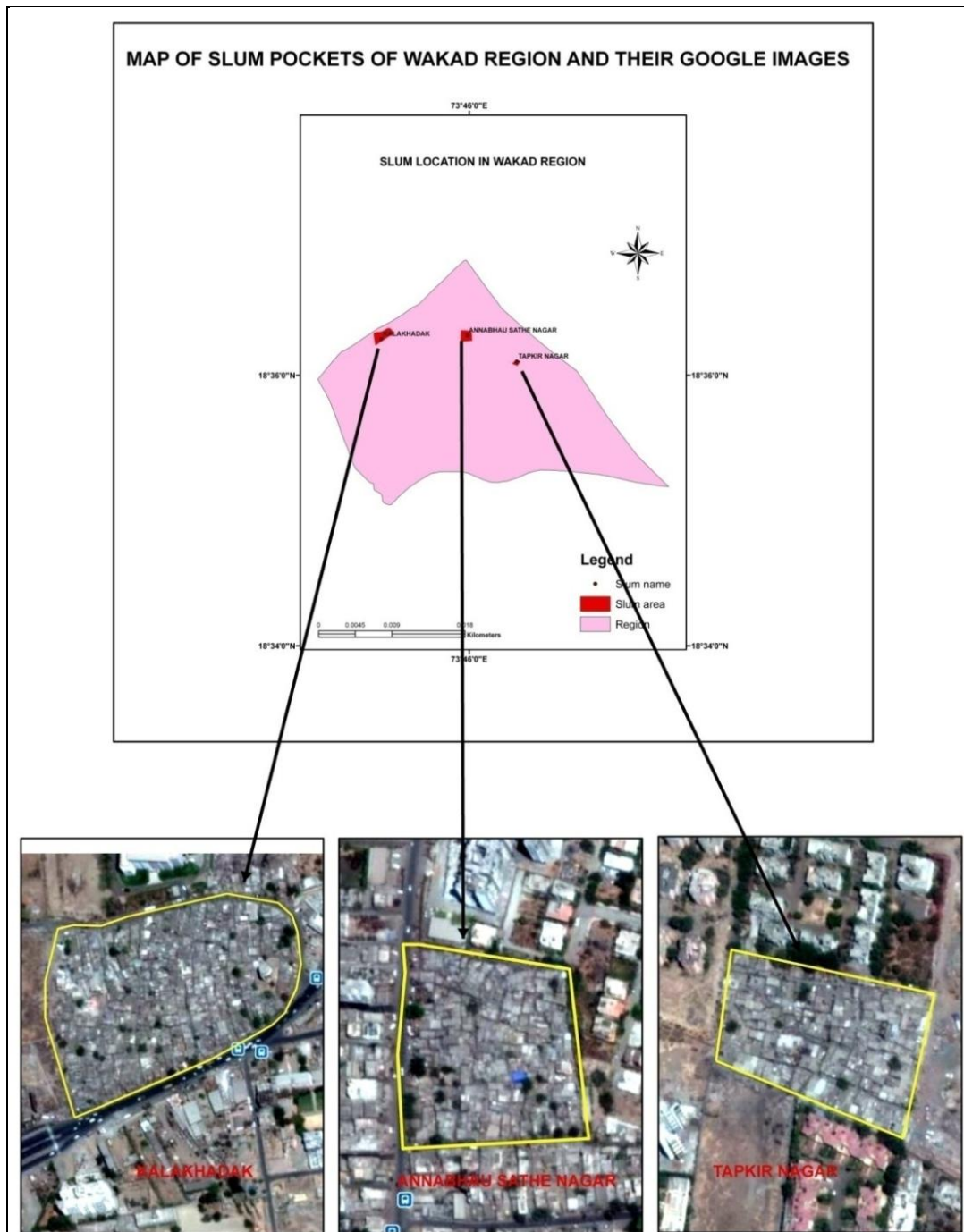
#### **4.3.2. Tapkir Nagar:**

This Slum is located at eastern side of Wakad region on 18° 36' 64" North Latitude and 73° 46' 98" East Longitude. Height from mean sea level is 570mt. It is near to the Dilip Wengaskar cricket Academy and D- Mart Mall center.

#### **4.3.3. Annabhau Sathe Nagar:**

This Slum is located at Northern side of Wakad region on 18° 36' 17" North Latitude and 73° 46' 40" East Longitude. Height from mean sea level is 580mt. It is near to the Police colony.

**Figure No.2.5:** The Location on Google Images of Waked Region.



*Source: GPS Surveyed by Researcher.*

#### **4.4. Pimpri Region:**

This region is located at western side of the city on  $18^{\circ} 36'$  North Latitude and  $73^{\circ} 48'$  East Longitude. Height from mean sea level is 565mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line and it is relatively developed area with Government offices, official help center, educational services, trade center, markets, transport connectivity and most industries are settled in this region.

##### **4.4.1. Ganesh Nagar:**

This Slum is located at Western Side of Pimpri region on  $18^{\circ} 36'72''$  North Latitude and  $73^{\circ} 48' 27''$  East Longitude. Height from mean sea level is 574mt.

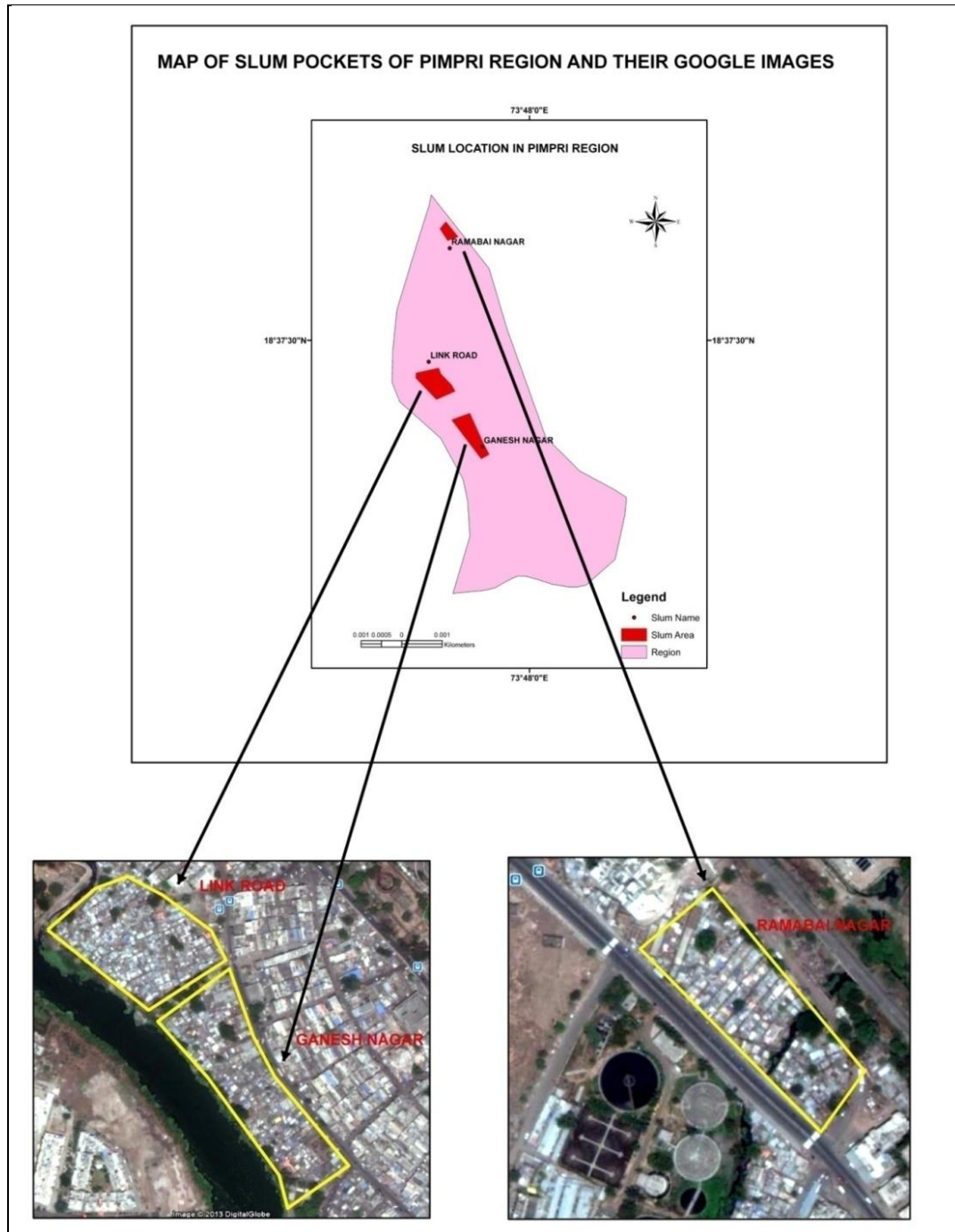
##### **4.4.2. Ramabai Nagar:**

This Slum is located at Northern Side of Pimpri region on  $18^{\circ} 37'65''$  North Latitude and  $73^{\circ} 47' 81''$  East Longitude. Height from mean sea level is 560mt.

##### **4.4.3. Link Road:**

This Slum is located at Western Side of Pimpri region on  $18^{\circ} 37'73''$  North Latitude and  $73^{\circ} 47' 74''$  East Longitude. Height from mean sea level is 561mt and it is near to Ganesh Nagar slum area.

**Figure No.2.6:** The Location on Google Images of Pimpri Region.



*Source: GPS Surveyed by Researcher.*

#### **4.5. Bhosari Region:**

This region is located at Eastern side of the city on 18<sup>0</sup> 38' North Latitude and 73<sup>0</sup> 50' East Longitude. Height from mean sea level is 570mt. It is also close to Pune Nashik Road and also near to old Mumbai-Pune National Road and Mumbai-Pune railway line and it is relatively well developed area with Industrial sectors, educational services, transport connectivity markets and Some government offices are situated on this region like, National Aids Research Institute (NARI), Central Institute of Road Transport (CIRT) are settled in this region.

##### **4.5.1. Gavali Nagar:**

This Slum is located at Western Side of Bhosari region on 18<sup>0</sup> 38'16" North Latitude and 73<sup>0</sup> 49'52" East Longitude. Height from mean sea level is 591mt. It is near to Major Dhyanchand Hocky Polygras Stadium, Neharu Nagar.

##### **4.5.2. Sanjay Nagar Wakhar:**

This Slum is located at Western Side of Bhosari region on 18<sup>0</sup> 35'22" North Latitude and 73<sup>0</sup> 49'83" East Longitude. Height from mean sea level is 560mt. It is near to Pune- Nashik Road.

##### **4.5.3. Hirabai Landage Chwal:**

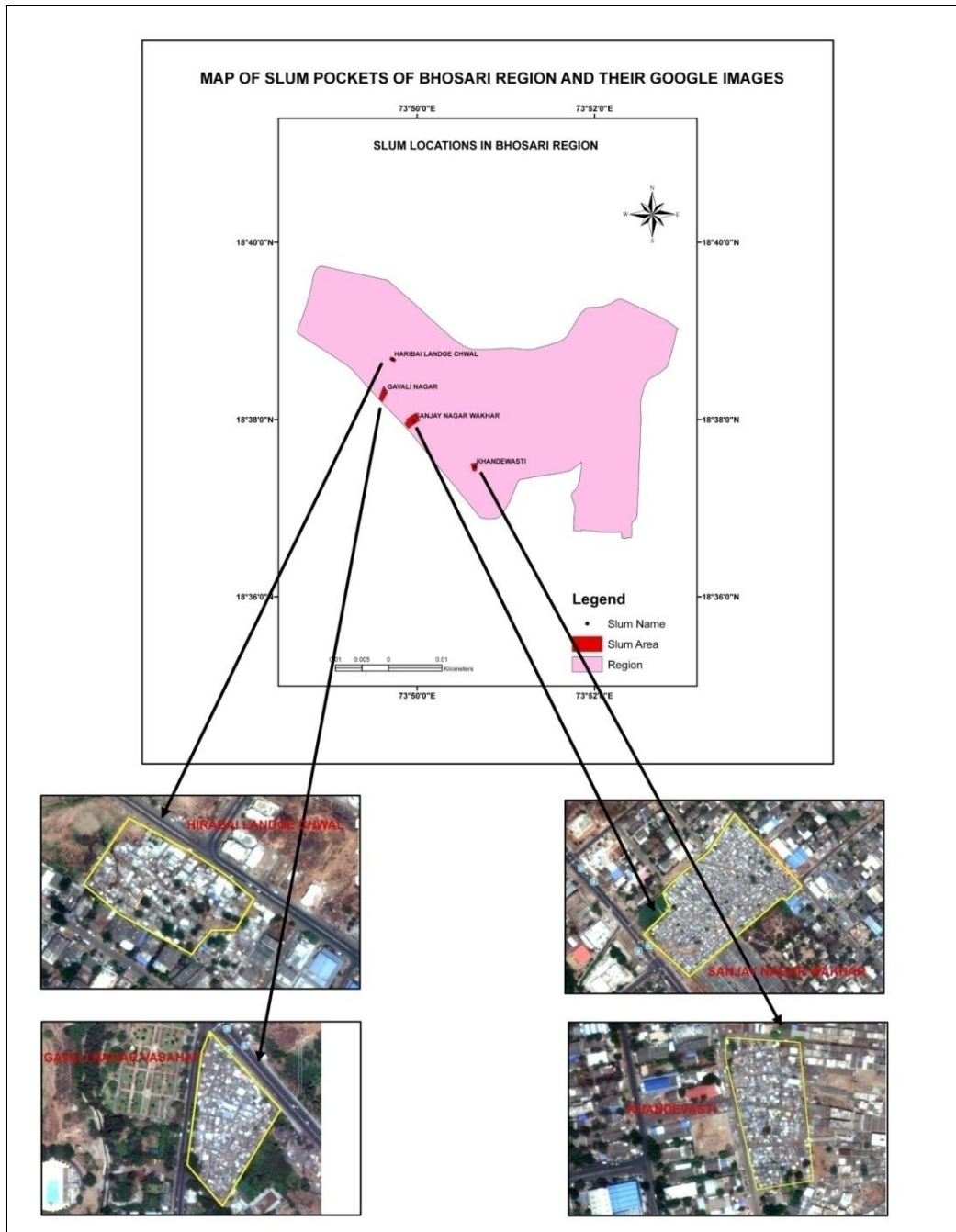
This Slum is located at Northern Side of Bhosari region on 18<sup>0</sup> 36'19" North Latitude and 73<sup>0</sup> 49'41" East Longitude. Height from mean sea level is 559mt. It is near to Pune- Nashik Road.

##### **4.5.4. Khandewasti:**

This Slum is located at Southern Side of Bhosari region on 18<sup>0</sup> 37'37" North Latitude and 73<sup>0</sup> 49'85" East Longitude. Height from mean sea level is 577mt. It is Close to Bhosari- Chinchwad Road and near to Pune- Nashik Road.



Figure No.2.7: The Location on Google Images of Bhosari Region.



Source: GPS Surveyed by Researcher.

#### **4.6. Pimpri Waghere Region:**

This region is located at western side of the city on 18° 38' North Latitude and 73° 48' East Longitude. Height from mean sea level is 572mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line and it is relatively developed area with Hospitals, Government offices, official help center, educational services, trade center, markets, transport connectivity and most industries are settled in this region.

##### **4.6.1. Star Rubber Morwadi:**

This Slum is located at North West Side of Pimpri Waghere region 18° 38'20" North Latitude and 73° 48'24" East Longitude. Height from mean sea level is 573mt. It is close to the Pimpri Chinchwad court office and Near to old Mumbai-Pune Road.

##### **4.6.2. Yashwant Nagar:**

This Slum is located at North East Side of Pimpri Waghere region 18° 38'36" North Latitude and 73° 49'35" East Longitude. Height from mean sea level is 597mt. It is close to the Tata Motors Industries (TELCO) and also close to Bhosari-Chinchwad Road.

##### **4.6.3. Vittal Nagar:**

This Slum is located at Eastern Side of Pimpri Waghere region 18° 38'05" North Latitude and 73° 49'29" East Longitude. Height from mean sea level is 594mt. It is close to the Annasaheb Magar Stadium, Neharu Nagar and Behind of Bhosari-Chinchwad and Bhosari Pimpri Road.

##### **4.6.4. Annasaheb Magar Nagar:**

This Slum is located at Eastern Side of Pimpri Waghere region 18° 38'18" North Latitude and 73° 47'92" East Longitude. Height from mean sea level is 580mt. It is close to the Mumbai- Pune National Highway Number Four.

##### **4.6.5. Nashik Phata:**

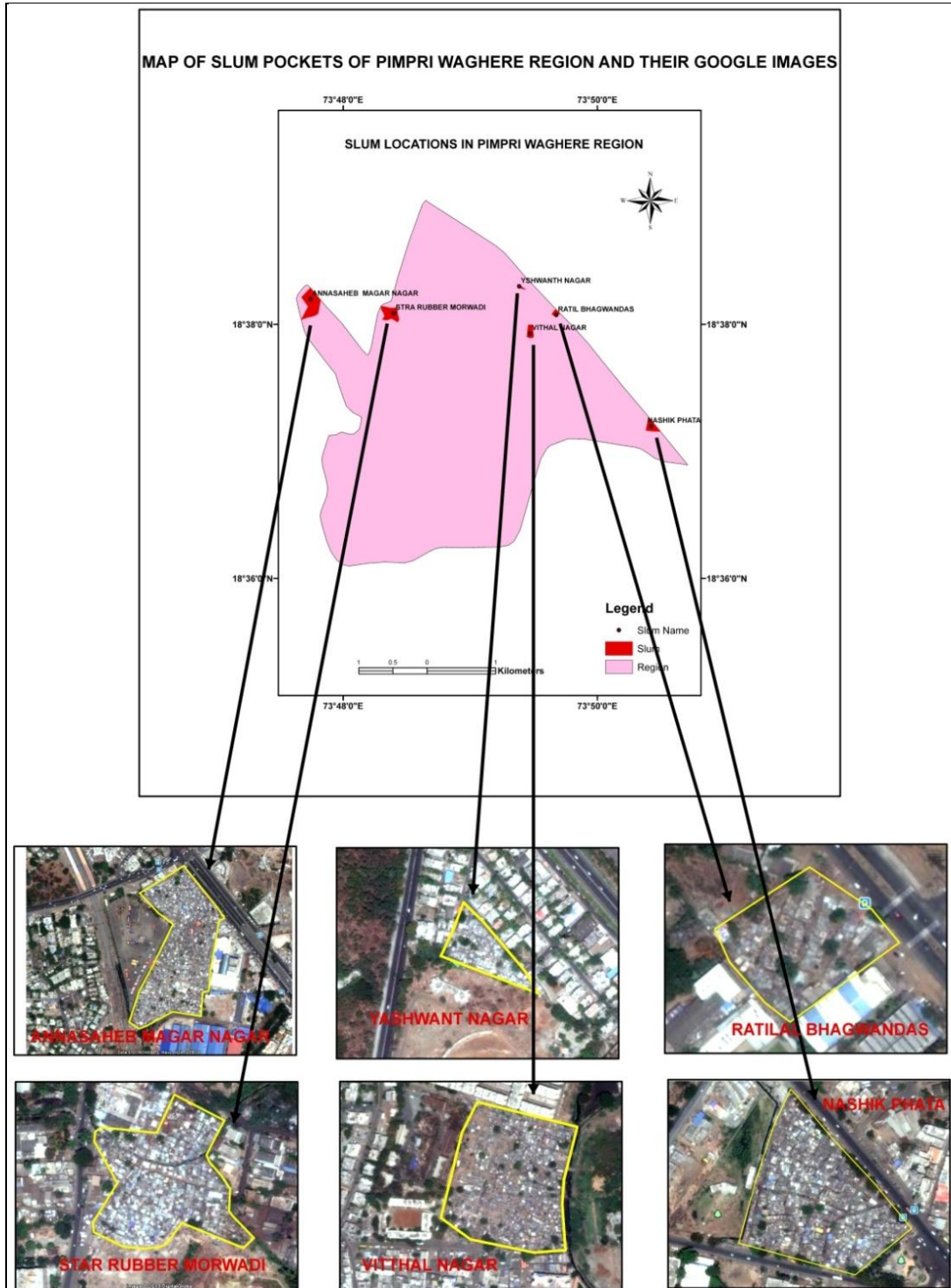
This Slum is located at South east Side of Pimpri Waghere region 18° 36'56" North Latitude and 73° 49'15" East Longitude. Height from mean sea level is 560mt. It is close to the Bhosari- Pimpri Road and Bhosari- Chinchwad Road and near to Pune- Nashik Road.

##### **4.6.6. Ratilal Bhagwan Das:**

This Slum is located at Eastern Side of Pimpri Waghere region 18° 35'31" North Latitude and 73° 49'85" East Longitude. Height from mean sea level is 555mt.

It is close to Bhosari- Chinchwad Road and near to Mumbai- Pune National Highway Number Four and Pune -Nashik Road.

**Figure No.2.8:** The Location on Google Images of Pimpri Waghere Region.



*Source: GPS Surveyed by Researcher.*

#### **4.7. Dapodi Region:**

This region is located at Southern side of the city on 18<sup>0</sup> 35' North Latitude and 73<sup>0</sup> 50' East Longitude. Height from mean sea level is 562mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line and also close to Mula- Mutha River. It is relatively developed area with official help center, educational services, trade center, markets, Mall and transport connectivity are settled in this region.

##### **4.7.1. Limbore Chwal:**

This Slum is located at Southern Side of Dapodi region 18<sup>0</sup> 34'92" North Latitude and 73<sup>0</sup>50'03" East Longitude. Height from mean sea level is 563mt. It is close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line and also close to Mula- Mutha River.

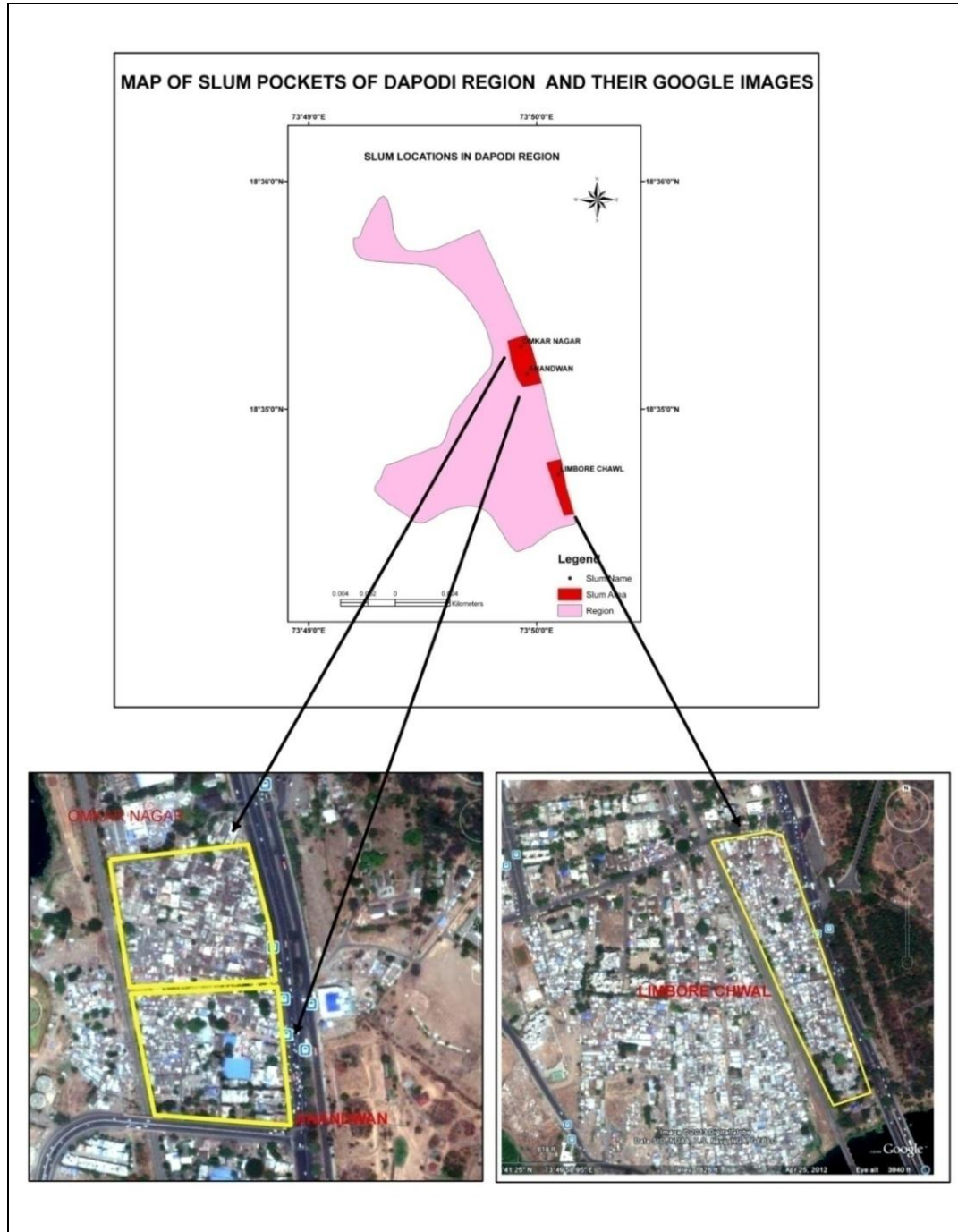
##### **4.7.2. Anandwan:**

This Slum is located at Southern Side of Dapodi region 18<sup>0</sup> 35'10" North Latitude and 73<sup>0</sup>49'82" East Longitude. Height from mean sea level is 563mt. It is close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line.

##### **4.7.3. Omkar Nagar:**

This Slum is located at Southern Side of Dapodi region 18<sup>0</sup> 35'22" North Latitude and 73<sup>0</sup>49'82" East Longitude. Height from mean sea level is 560mt. It is close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line.

Figure No.2.9: The Location on Google Images of Dapodi Region.



Source: GPS Surveyed by Researcher.

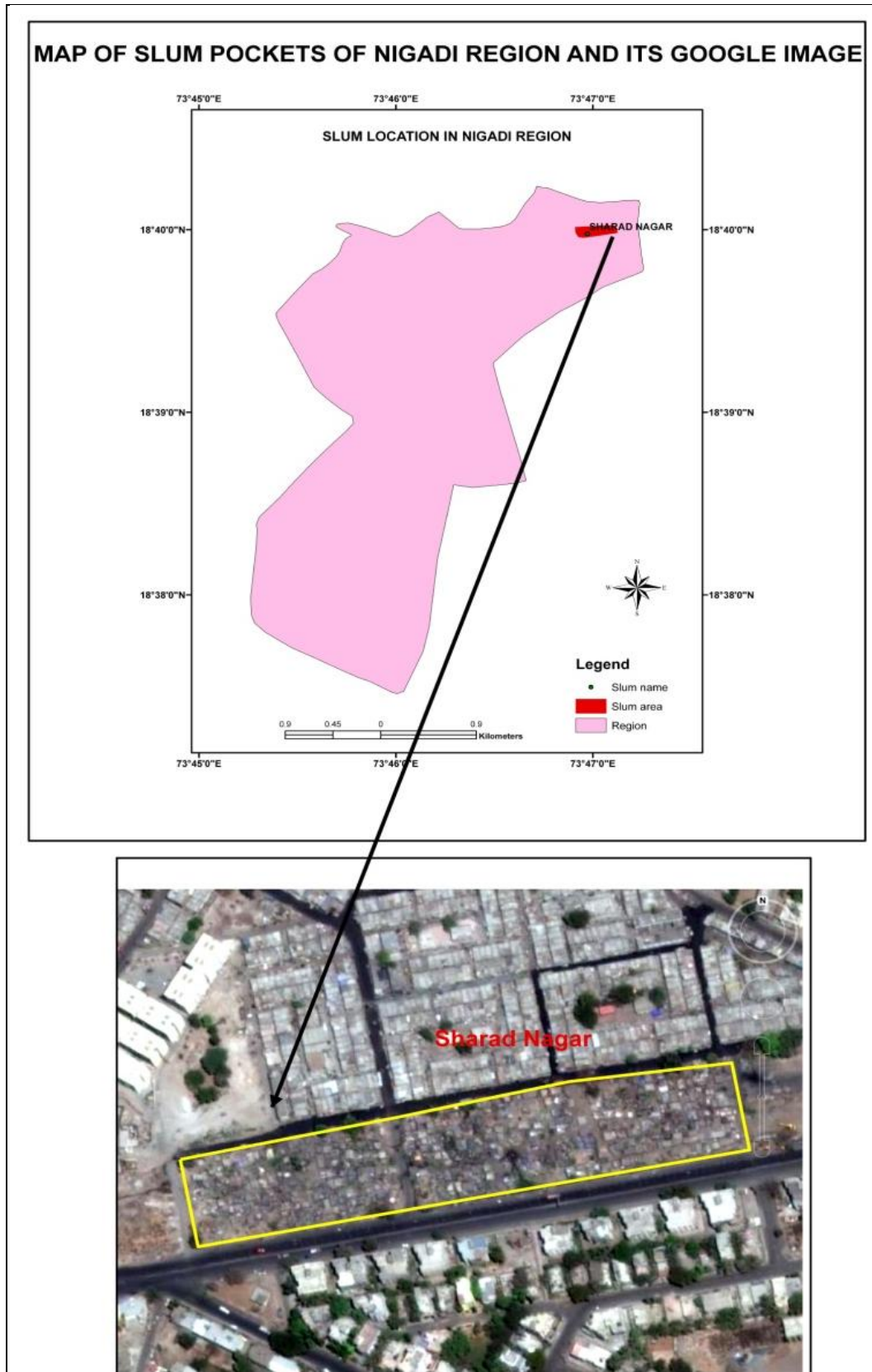
#### **4.8. Nigadi Region:**

This region is located at North West side of the city on  $18^{\circ}38'$  North Latitude and  $73^{\circ}48'$  East Longitude. Height from mean sea level is 615mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line. It is relatively developed area with educational services and transport connectivity and industries are settled in this region.

##### **4.8.1. Sharad Nagar:**

This Slum is located at Western Side of Nigadi region on  $18^{\circ}40'20''$  North Latitude and  $73^{\circ}47'11''$  East Longitude. Height from mean sea level is 612mt. It is close of Bhosri- Nigadi Road and near to National Highway Number Four (old Mumbai- Pune Road.)

Figure No.2.10: The Location on Google Images of Nigadi Region.



Source: GPS Surveyed by Researcher.

#### **4.9. Kiwale Region:**

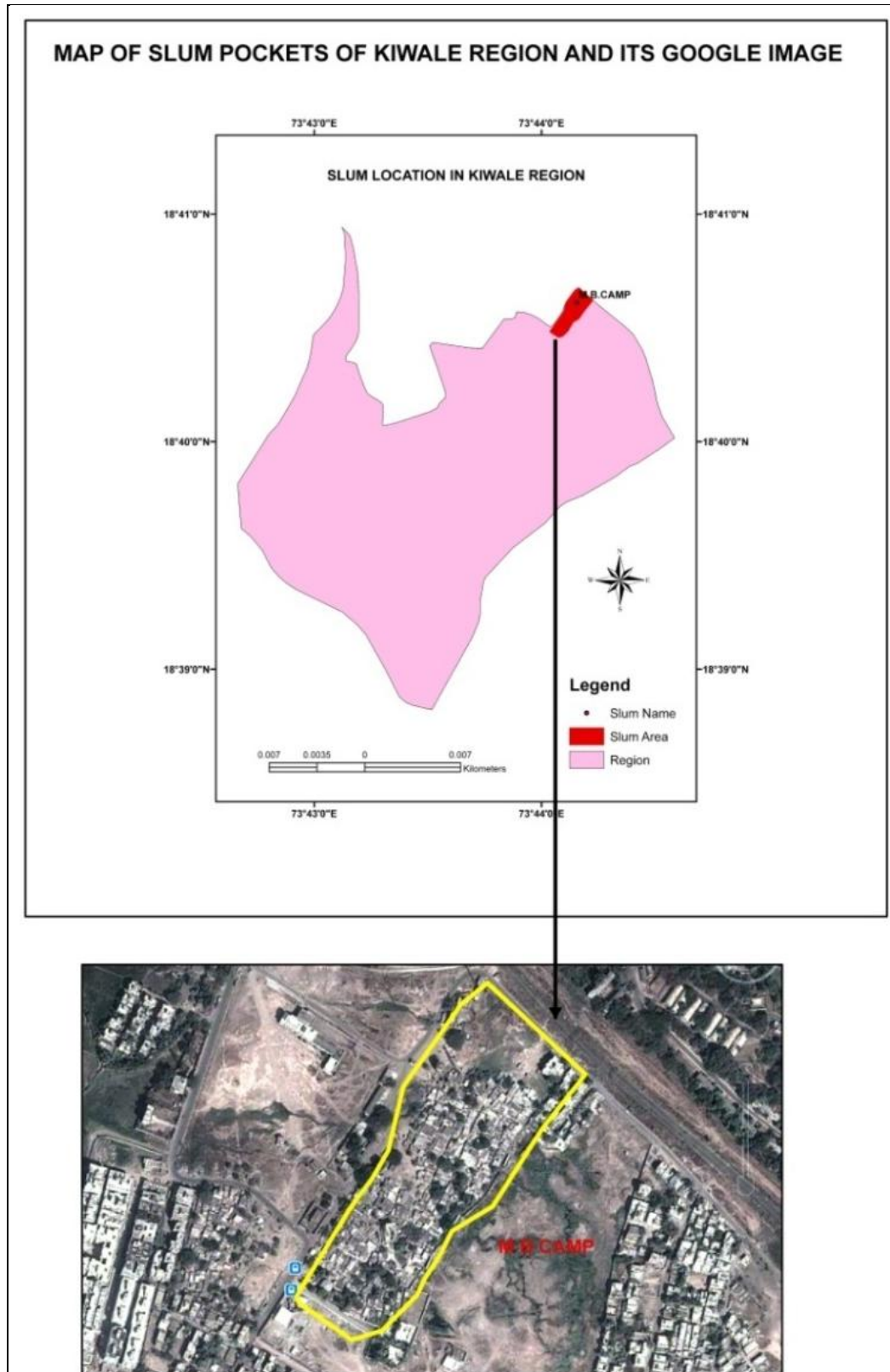
This region is located at North West side of the city on  $18^{\circ}40'$  North Latitude and  $73^{\circ}44'$  East Longitude. Height from mean sea level is 610mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line and also near to New Express Highway. This region is situated at outside of the city due to It is relatively less developed area but some factors are well develop like educational services and transport connectivity.

##### **4.9.1. M. B. Camp:**

This Slum is located at Western Side of Kiwale region on  $18^{\circ}40'34''$  North Latitude and  $73^{\circ}44'80''$  East Longitude. Height from mean sea level is 609mt. It is also close to National Highway Number Four (old Mumbai-Pune Road) and Mumbai-Pune railway line and also near to New Express Highway.



Figure No.2.11: The Location on Google Images of Kiwale Region.



Source: GPS Surveyed by Researcher.

**5: Classification of slums in Pimpri Chinchwad urban area:**

The classification of urban places poses the several major problems. (R.Ramachandran,2009). There are number of factors which could influence the origin and location of the urban settlement. These factors are job opportunities, industrialization, amenities, education, attraction, trade, transportation and socio-economic development of the urban settlement. (Industrial and economic planning division of TCPO). As the slums are the part and parcels of the cities and urban areas. It is clear that above mentioned factors and few other factors can also influence to have the origin of slum in the particular urban area. These factors rather after the origin of slum will form the situational background for the slum while studying the slums in Pimpri Chinchwad urban area. It is found that the slum has different type’s situational background or the site characteristics. The analysis of these situational factors or the site characteristics of slums give rise to following classification of slum in the Pimpri Chinchwad urban area.

**5.1: Classification of slums on the basis of site characteristics:**

The geographical setting of a town is of great importance in determining the quality of urban environment stimulating its further growth and occasionally threatening its very survival.(R.Ramachandram,2009). Geographically Pimpri Chinchwad urban area is settled on small plateau area, near to river side, near to small stream side, flat land location and hillock location. all these above mentioned factor responsible for locality of slums. Most of slums are found near to natural streams and hillock location. These all site characteristic are shown table no 2.1.

**Table No. 2.1.** Classification of slums on the basis of site characteristics

Sr. No.	Site Characteristics	Name of Slum Region	Name of Slum Pockets
1.	Hill Location	Akurdi	Ajanta Nagar
			Nagesh Nagar
		Wakad	Kalakhadak
			Tapkir Nagar
			Annabhau Sathe Nagar
		Bhosari	Hirabai Landage Clwal
			Kandewasti
			Sanjay Nagar Wakhar

		Pimpri Waghere	Ratilal Bhagwandas Yashwant Nagar
		Nigadi	Sharad Nagar
		Kiwale	M.B. Camp
2.	River Side Location	Pimpri	Ganesh Nagar Link Road
		Dapodi	Limbore Chwal
			Anandwan
			Omkar Nagar
3.	Small Stream Side Location	Akurdi	Jay Malhar Nagar
		Chinchwad	Santosh Nagar
			Udyog Nagar
		Pimpri	Ramabai Nagar
		Pimpri Waghere	Vitthal Nagar
			Nashik Phata
Star Rubber Morewadi			
Bhosari	Gawali Nagar		
4.	Flat Land Location	Chinchwad	Anand Nagar
			Saibaba Nagar
		Pimpri Waghere	Annasaheb Magar Nagar

*Source: Own Sample Surveyed*

### **5.2: Classification of Slums on the Basis of Major Surrounding Functions and Services:**

The classification of cities based on the relative importance of primary, secondary and tertiary activities. (R.Ramachandram,2009). As slums are the part of urban settlement these poorly built up on unauthorized land. Most of slums are relatively locate at near to industrial units, near to railway line and near to roadways. These all characteristics are shown table no 2.2.

**Table No. 2.2.** Classification of Slums on the Basis of Surrounding Functions & Services:

Sr. No.	Slum Type	Name of Slum Region	Name of Slum Pockets
1.	Very Close To Industrial Units	Akurdi	Ajanta Nagar
		Bhosari	Gavali Nagar
			Vasahat
		Pimpri Waghere	Khandewasti
			Yashwant Nagar
			Star Rubber
		Annasaheb Magar Nagar	
2.	Very Close To Railway Line	Chinchwad	Anand Nagar
		Kiwale	M.B. Camp
3.	Very Close To Roadways	Akurdi	Jaymalhar Nagar
		Chinchwad	Udyog Nagar
			Santosh Nagar
		Wakad	Kalakhadak
			Tapkir Nagar
			Annabhau Sathe Nagar
		Pimpri	Ganesh Nagar
			Ramabai Nagar
			Link Road
		Pimpri Waghere	Vitthal Nagar
Nigadi	Sharad Nagar		
4.	Very Close To Railway Line & Roadways	Akurdi	Nagesh Nagar
		Chinchwad	Sai Baba Nagar
		Bhosari	Sanjay Nagar
			Wakhar
			Hirabai Landage Chwal

		Pimpri Waghere	Nashik Phata
			Ratilal Bhagwandas
		Dapodi	Limboore Chwal
			Anandwan
			Omkar Nagar

*Source: Own Sample Surveyed*

**5.3: Classification of slum on the Basis of Land Ownership encroachments:**

The rapid growth of the cities in particular has brought in its wake a large set of problems perhaps, the most important of these is the problem of housing for poorer site of society. The available housing accommodation in the city is far too expensive and the poor have by and large settled down in illegal way on vacant public or private land. (R.Ramachandram,2009). The observation made while studying the slum in the Pimpri Chinchwad urban area that they are settled on land own by the different owners. On the basis of ownerships these slums will be classified as follows.

**Table No. 2.3.**Classification of slum on the Basis of Land Ownership encroachments

Sr. No.	Land Ownership encroached by slums	Name of Slum Region	Name Of Slums Pockets
1	PCMC LAND	Chinchwad	Udyog Nagar
		Pimpri	Link Road
2	PCNTDA LAND	Akurdi	Nagesh Nagar
		Wakad	Annabhau Sathe Nagar
		Bhosari	Khandewasti
		Nigadi	Sharad Nagar
3	MIDC LAND	Akurdi	Ajanta Nagar
		Bhosari	Gavali Nagar Vasahat
		Pimpri Waghere	Annasaheb Magar Nagar
4	GOVERNMENT LAND	Wakad	Kalakhadak

		Pimpri	Ramabai Nagar
		Pimpri Waghere	Vithal Nagar
		Pimpri Waghere	Nashik Phata
5	PRIVATE LAND	Akurdi	Jay Malhar Nagar
		Chinchwad	Santosh Nagar
		Wakad	Tapkir Nagar
		Pimpri Waghere	Yashwant Nagar
		Pimpri Waghere	Ratilala Bhagawandas
		Dapodi	Limbore Chwal
		Kiwale	M.B. Camp
6	MIDC & PRIVATE LAND	Pimpri Waghere	Star Rubber Morewadi
7	PRIVATE & RAILWAY LAND	Chinchwad	Anand Nagar
		Chinchwad	Saibaba Nagar
		Bhosari	Hirabai Landage Chwal
		Dapodi	Omkar Nagar
8	GOVERNMENT & PRIVATE LAND	Pimpri	Ganesh Nagar
9	RAILWAY LAND	Dapodi	Anandwan
		Bhosari	Sanjay Nagar Wkahar

*Source: Own Sample Surveyed*

**6. Geographical assessment and site specific background of study area:**

Any region is the entity of many aspects. Some of them are naturally made and some are man-made aspect. These aspects or objects comprises to from the natural environment as well as manmade environment. The same will be the situation

in the study area. Though it is an urban area many times it shows some of the impression or impulses natural aspect. Where it definitely show many number of manmade or human aspect. Geographical assessment of any area or region is always deal with the analysis of different objects observed in the area and the interpretation of interrelationship between the natural and manmade factors.

For the sake of systematic understanding the two groups of factors were studied under the following heading:

### **6.1. Assessment of Natural aspects in study area:**

Assessment of natural aspects mainly includes the relief drainage pattern, Geology, Climate and vegetation in the study area. These factors basically determine the situational background of the study area.

These aspects can geographically assess in the following ways with their situational background and the study of geomorphic environment of the region with help of following aspects, such as, Relief, Drainage, Geology, Climate and vegetation etc.

#### **6.1.1. Geology of study area:**

The area selected for the study is a part of Deccan trap of Maharashtra. In general area is covered by thick pile of basaltic lava flow of Deccan trap. Pimpri Chinchwad urban area lies on high plateau there are low hills on the northern and western side of the area. To contain the Sahyadri ranges in these ranges many peaks are over 1000 meters from sea level. The city lies in the seismically active zone of Koyna Region, which is about 100 km. south of Pune. *.(City Development Plan Report of PCMC, 2006-2012).* The region has recently been upgraded to lie in zone IV, which is the second most dangerous seismic zone in India. Consequently, the area has experienced some moderate intensity and many low-intensity earthquakes. Although earthquakes were not known to have originated in the cities of Pune or Pimpri-Chinchwad, an earthquake of a very slight intensity took place in Pune with its epicenter in Dehu. Seismologists were however unable to explain the occurrence of this earthquake.

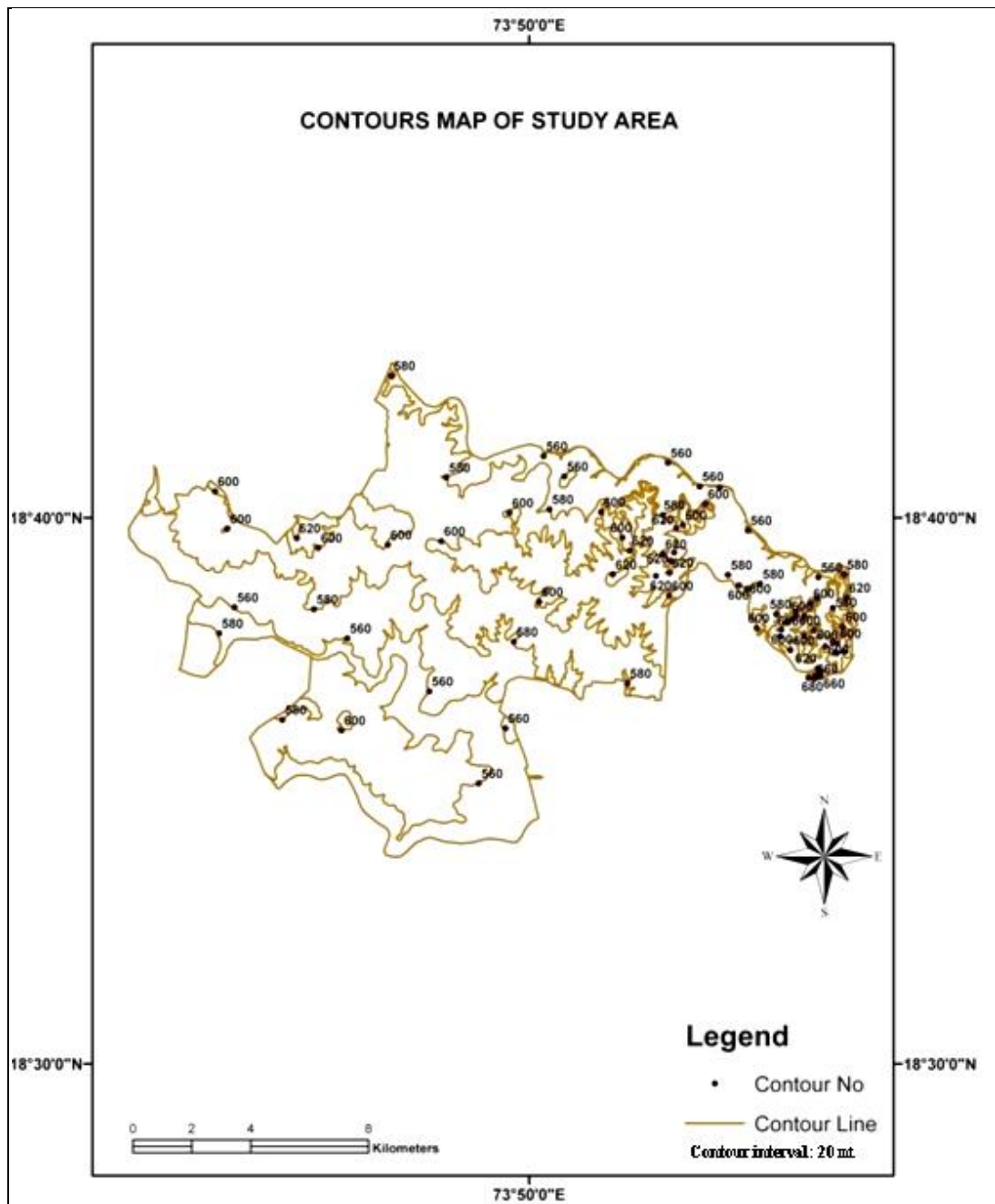
#### **6.1.2. Relief of study area:**

The trend of elevation increased west to east side and south to north side of the study area higher elevation point is east side, north side, northwest side of study area. In contour map shows the steep slope in east, north side and gentle slope in south, south west and central part of the study area. North side and east side of the study area

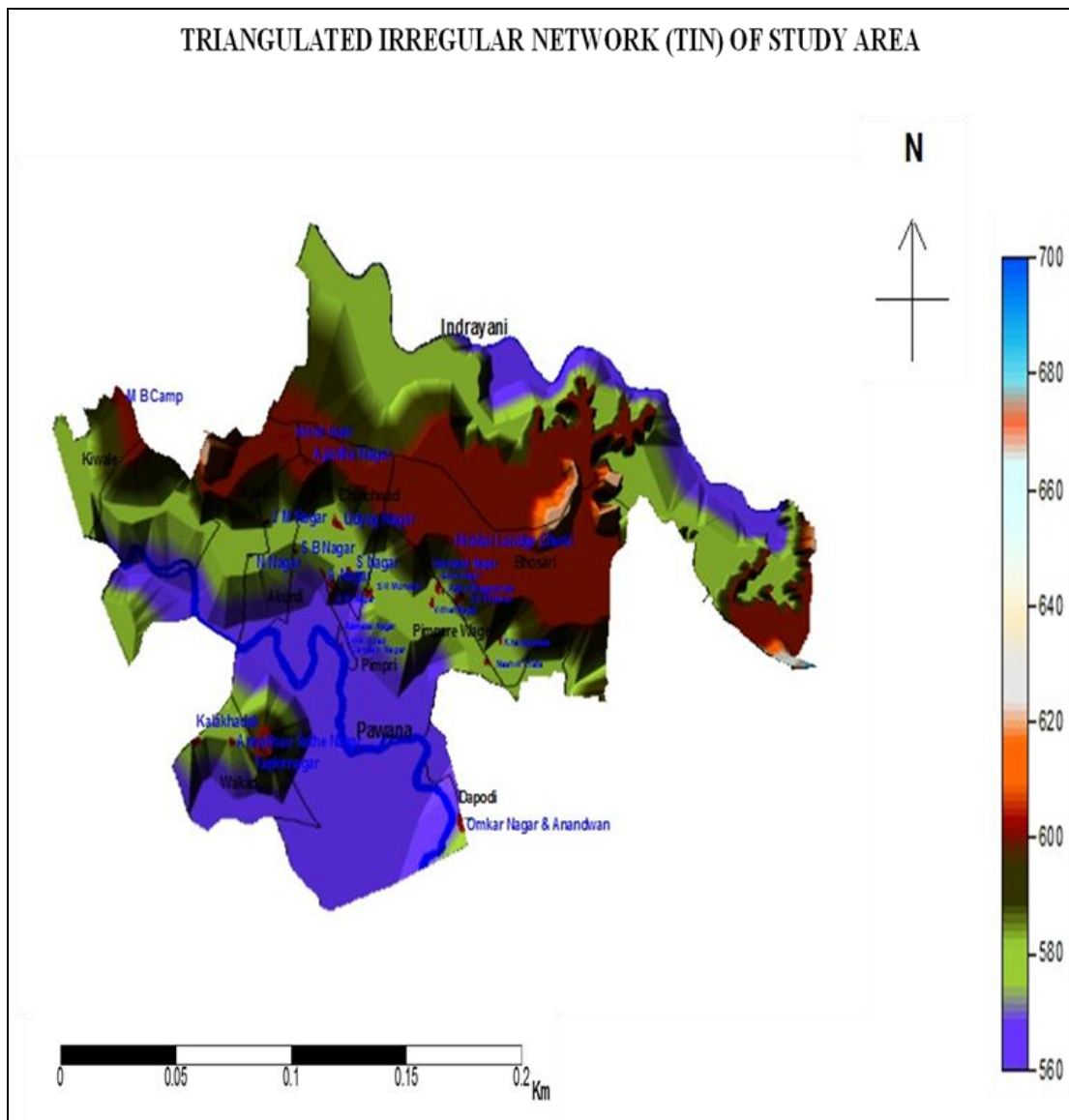
contour interval distance in two lines is less it shows steep and gradient slop. South side and west side of the study area contour interval distance in two lines is high it shows gentle slope. With the help of contour map create the Triangulated Irregular Network (TIN: Fig.No.2.13) model given the information regarding elevation. TIN model shows the surface of the study area. General trend of slop is from north, south and east side to west side. The highest average elevation is 660 meters to 700 meters from sea level in east and north side of study area. The study area bounded by Gorwadeshwer hill on north side, Dattagad hill on east side, Durgadevi hill on north west side and Sahyadri hill on west side. (*City Development Plan Report of PCMC, 2006-2012*)



Figure No.2.12: Relief of study area.



**Figure No.2.13:** Relief of study area (TIN Model).



*Source: GPS Surveyed by Researcher.*

Following are the observation regarding the geomorphic character of different slum pockets in Pimpri Chinchwad urban area.

#### **6.1.2.1. Akurdi Region:**

There are three slum pockets in Akurdi region geomorphologically Ajanta Nagar slum is located on the hill top area which is at the northern side of the Akurdi region. Jaymalhar Nagar slum is on well spreaded basaltic rock on khandoba mall. Whereas the slums of Nagesh Nagar on gentle hill slope area of the Akurdi region. The Akurdi region geomorphologically characterized as plateau like extension of sahyadri ranges where on, many places there is thin layer of soils spreaded over the area.

#### **6.1.2.2. Chinchwad Region:**

There are four slum pockets in Chinchwad region. The southern part of Chinchwad region is adjacent Part of left bank of Pawana river which has thick alluvial soil cover. The middle and central part of Chinchwad region includes two slum pockets namely Anand Nagar and Santosh Nagar the both slum pockets are on the plain valley flanks of Pawana river on its left bank. This flat plain area has thick soil cover at its south and gentle hill slope only for the Anand Nagar at its north. The Saibaba Nagar slum at western side of the Chinchwad region. It is situated on barren basaltic slope of the area. Whereas the Udyog Nagar is on the bank of two small sub-stream of Pawana river one is at its east and another is at its west.

#### **6.1.2.3. Pimpri Region:**

There are three slum pockets in Pimpri region. The Pimpri is located on the left bank of Pawana river. The Ganesh Nagar slum and the link road slums are on the left valley flanks of Pawana river. The area under the slum is plain zone covered with alluvial material. Another slum Ramabai Nagar slum is at the north tip of Pimpri region is on the gentle slope of zone. This flat zone is slightly away from the Pawana river bank.

#### **6.1.2.4. Wakad Region:**

There are three slum pockets in wakad region. The Kalakhadak slum and Annabhau sathe Nagar slum both slums are settled on gentle hill slope areas of the wakad region. Tapkir Nagar slum is situated on south eastern side of wakad on right bank of river Pawana. This slum is on the plain area of river Pawana at its right bank under layned by thick soil cover at its south east and gentle hill slope on north east side of wakad region. Geomorphologically region has gently sloped flat zone at northern side of wakad region and the remaining part of the region is plain area under the influence of Pawana river. Which has thick soil cover at its central and south eastern part.

#### **6.1.2.5. Bhosari Region:**

There are four slum pockets in Bhosari region. The Hirabai landage chawl and Gavali Nagar slum is located in between the four small sub streams of the Pawana river. Two streams are at northern side of Hirabai landage chawal and another is at south western side of the Gavali Nagar slum pocket this area is a plain zone covered with alluvial soil at west and gentle hill slope. Another Sanjay Nagar wakhar slum at south western side of Bhosari region is situated on one small sub stream of Left Bank

of Pawana river. This stream is flowing through the Sanjay Nagar wakhar slum pockets. The Khandewasti slum at southern side of Bhosari region it is situated on the bank of two small stream one stream is southern side and another stream is eastern side of the Khandewasti slum pocket. These areas of this slum pockets are gently sloped plain areas.

#### **6.1.2.6. Pimpri Waghere Region:**

There are six slum pockets in Pimpri waghere region. The Annasaheb Magar Nagar and Yashwant Nagar slum pockets are flat topped gentle sloping areas with gradual decrease in slope towards its south. Annasaheb Magar Nagar is at western side of this region and Yashwant Nagar is northern side of this region. Ratilal bhagawandas slum pocket and Nashik phata slum pocket are situated on small hill slopes as well as near to sub stream. Star rubber Morwadi slum pocket is situated on small hill top area in northern side of Pimpri waghere region. The another slum is Vitthal Nagar slum which is settled on the gentle slope area of small feeder streams of Pawana. Geomorphologically southern part of this region is plain valley flank of Pawana river. The middle and central part is flat topped small plateau like zone having height between 560 to 580 Mt. The northern part shows many small feeder stream of Pawana and small valley in between with few hillocks at their source region.

#### **6.1.2.7. Dapodi Region:**

There are three slum pockets in dapodi region. The Dapodi region is located at the left bank of Pawana river. The Omkar Nagar and Anandwan slum pockets are on the valley flank of Pawana river at its left bank. The area under the slum plain zone covered with alluvial material. Another slum Limbore chawl is at the southern part of the Dapodi region which is on the gentle sloping plain area of left bank of Pawana river. The total Dapodi region has a boarder of Pawana river at its western side. The slums are situated on the eastern side of this region.

#### **6.1.2.8. Nigadi Region:**

The slum selected for study from this region is Sharad Nagar slum which on the flat topped zone of northern tip of Nigadi region. The Nigadi region as a small part of plateau over covered with basaltic rock at many places and very thick layer of soil spread over the area.

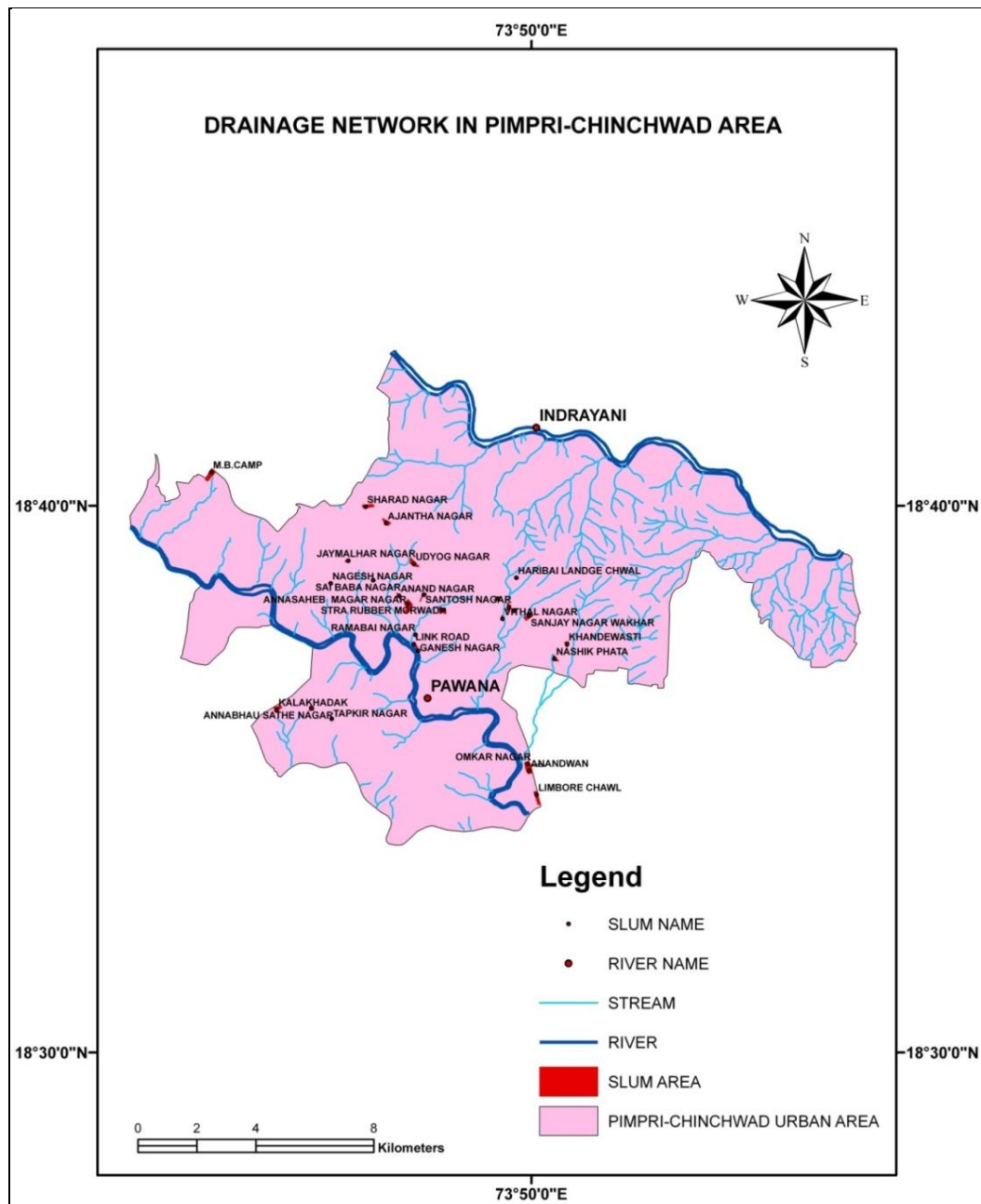
#### **6.1.2.9. Kiwale Region:**

The slum selected for study from this region is M.B. Camp slum which on the flat topped area of northern tip of Kiwale region. The Kiwale region as a small part of plateau over layned by basaltic rock at many places and very thin layer of soil spread over the area.

#### **6.1.3. Drainage of study area:**

Pimpri Chinchwad area is bounded by three rivers Pavana, Mula, and Indrayani. This rivers flow through this area Pavana dam construct on Pavana river through this dam supplying the water for drinking purpose, domestic uses, Industrial uses and Agriculture use in this area but release of domestic and industrial effluents, dumping of debris and domestic pollution has severely affected the quality of the Pavana water also some slum are situated on river side which has negative impact on the river water quality. (*City Development Plan Report of PCMC, 2006-2012*).

**Figure No.2.14:** Drainage of study area.



*Source: GPS Surveyed by Researcher.*

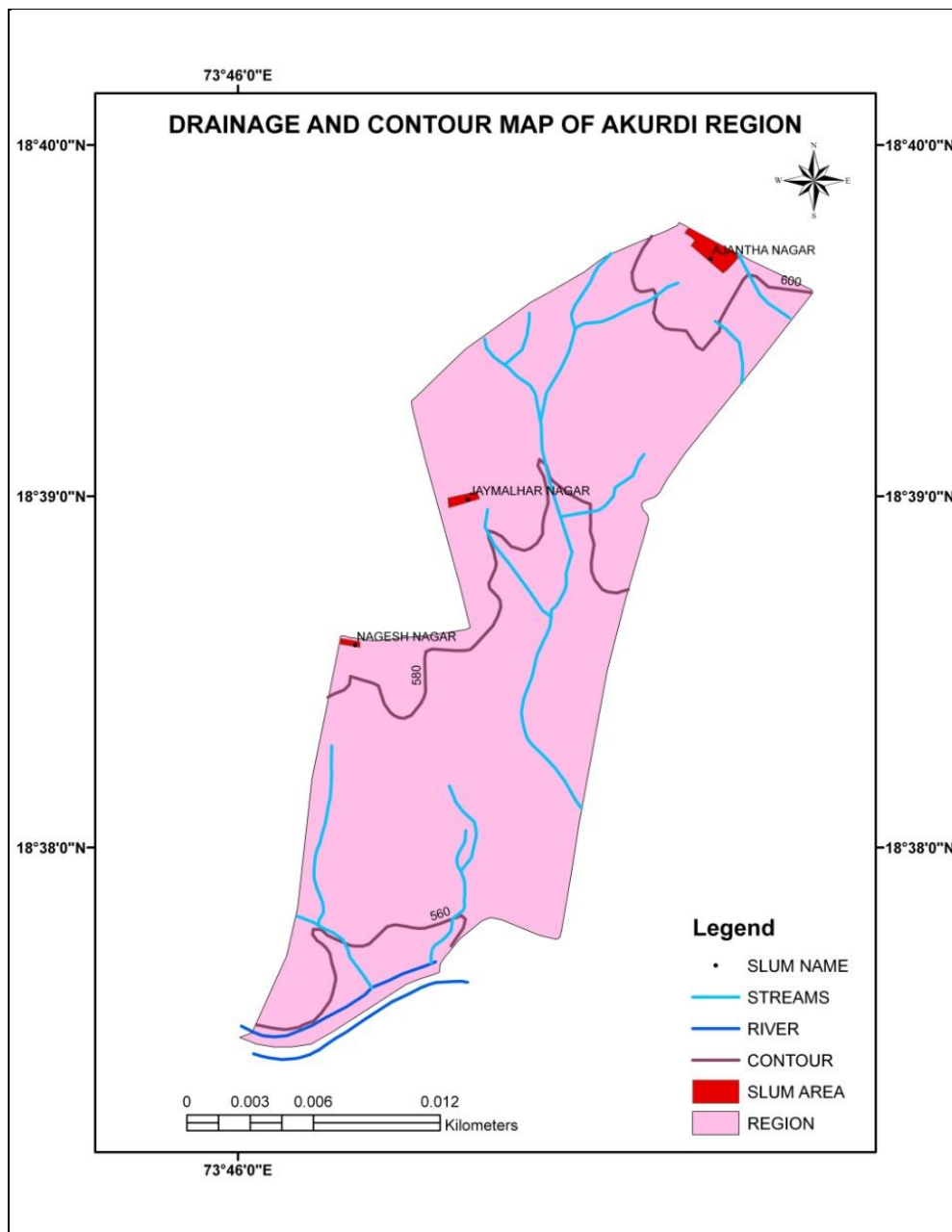
All below interpretation is based on the secondary information traced from the survey of India Toposheet No 47. F/10 and Toposheet No 47. F/14.

### 6.1.3.1. Akurdi Region:

The slope of this region decrease from North to south by 2.21%. There are about thirteen small streams. All these streams originate at North side and flows from north to south towards Pawana river. The streams following through Akurdi region is third order according ordering rank of Strahler methods. The total length of these all streams is 9636.89mt. (9.64kms.). Out of all streams, few streams are located at south

side of the region and other few streams are located at Middle East side of the region. In general the Akurdi region is situated on hillock at left bank of Pawana river.

**Figure No.2.15:** Drainage and Contour map of Akurdi Region.



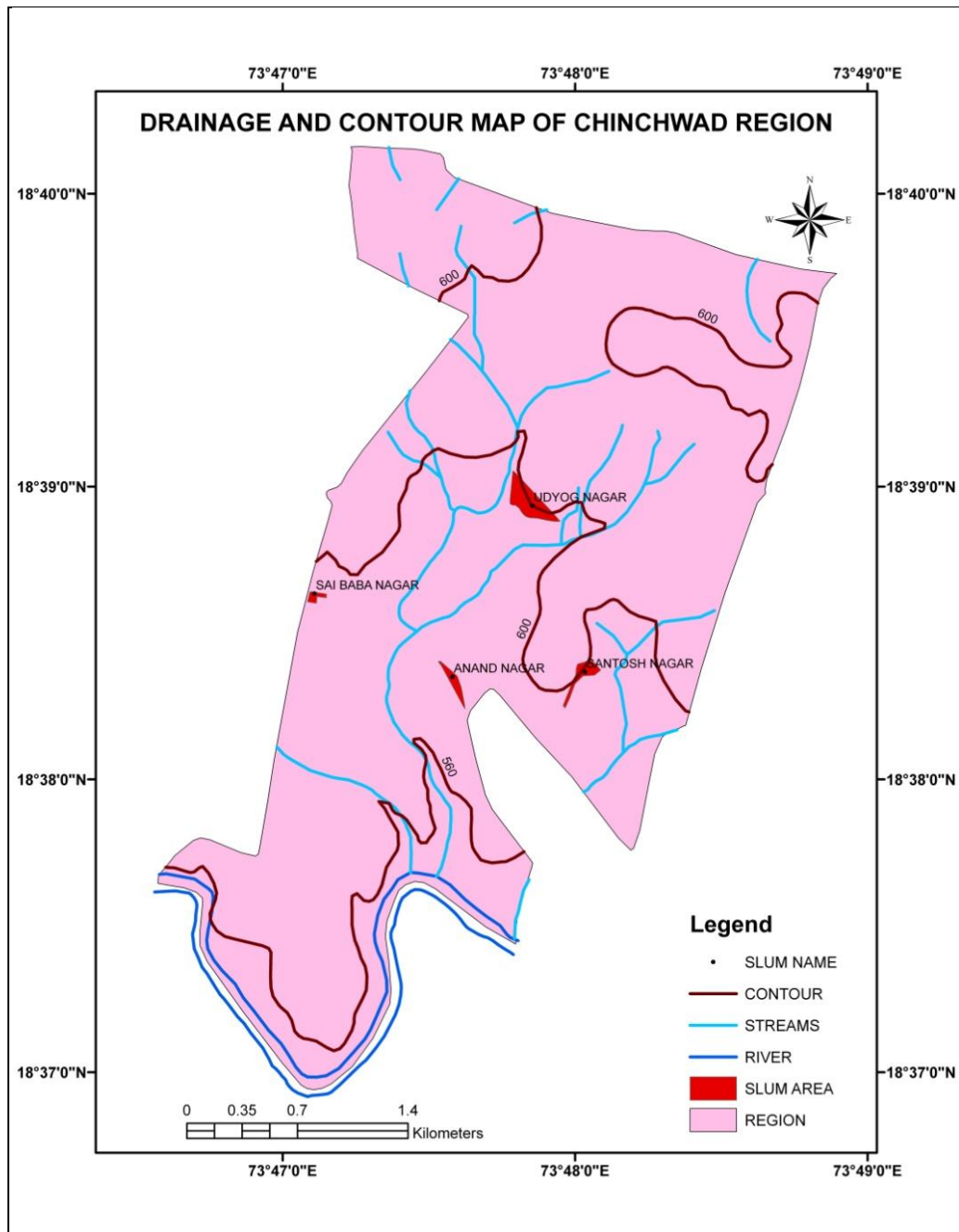
*Source: GPS Surveyed by Researcher.*

### 6.1.3.2. Chinchwad Region:

The slope of this region decrease from North to south by 2.22% . There are about twenty three small streams. All these streams originate at North, west and east side and flows from north to south towards Pawana river. The streams following through Chinchwad region is third order according ordering rank of Strahler methods.. The total length of these all streams is 15972.73mt. (15.97kms.). Out of all streams, few streams are located at east side of the region and other few streams are

located at northwest side of the region. In general the Chinchwad region is situated on narrow strip of plain ground at left bank of Pawana river.

**Figure No.2.16:** Drainage and Contour map of Chinchwad Region.



*Source: GPS Surveyed by Researcher.*

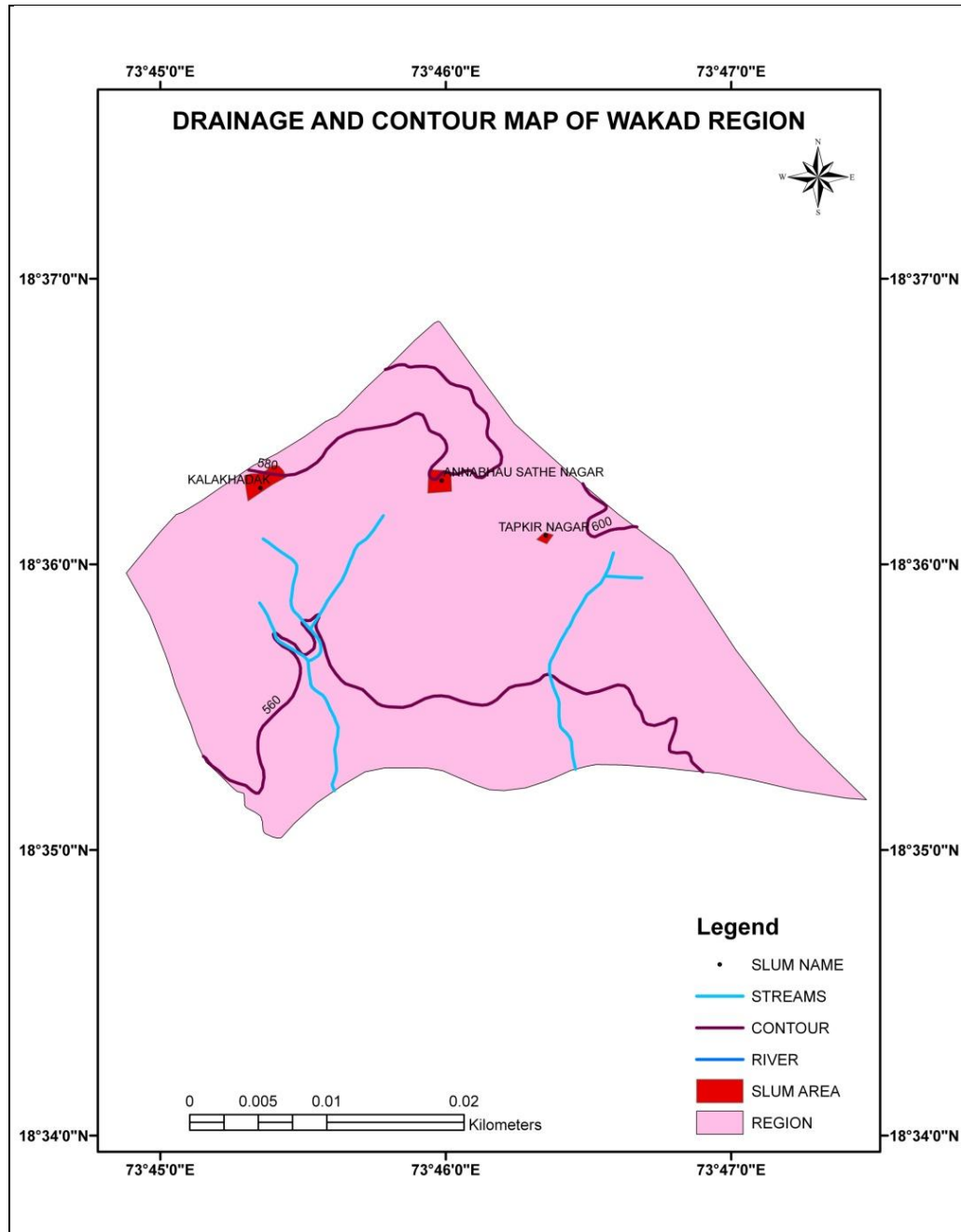
### 6.1.3.3. Wakad Region:

The slope of this region decrease from North to south by 4.12%. There are about five small streams. All these streams originate at Middle East side of the region and flows from north to south and east to south towards Mula- Mutha river. The streams following through Wakad region is second order according ordering rank of Strahler methods. The total length of these all streams is 5135.66mt. (5.14kms.). Out



of all streams, few streams are located at east side of the region and other few streams are located at west side of the region. In general the Wakad region is situated on plain ground pattern of right bank of Mula- Mutha river.

**Figure No.2.17:** Drainage and Contour map of Wakad Region.



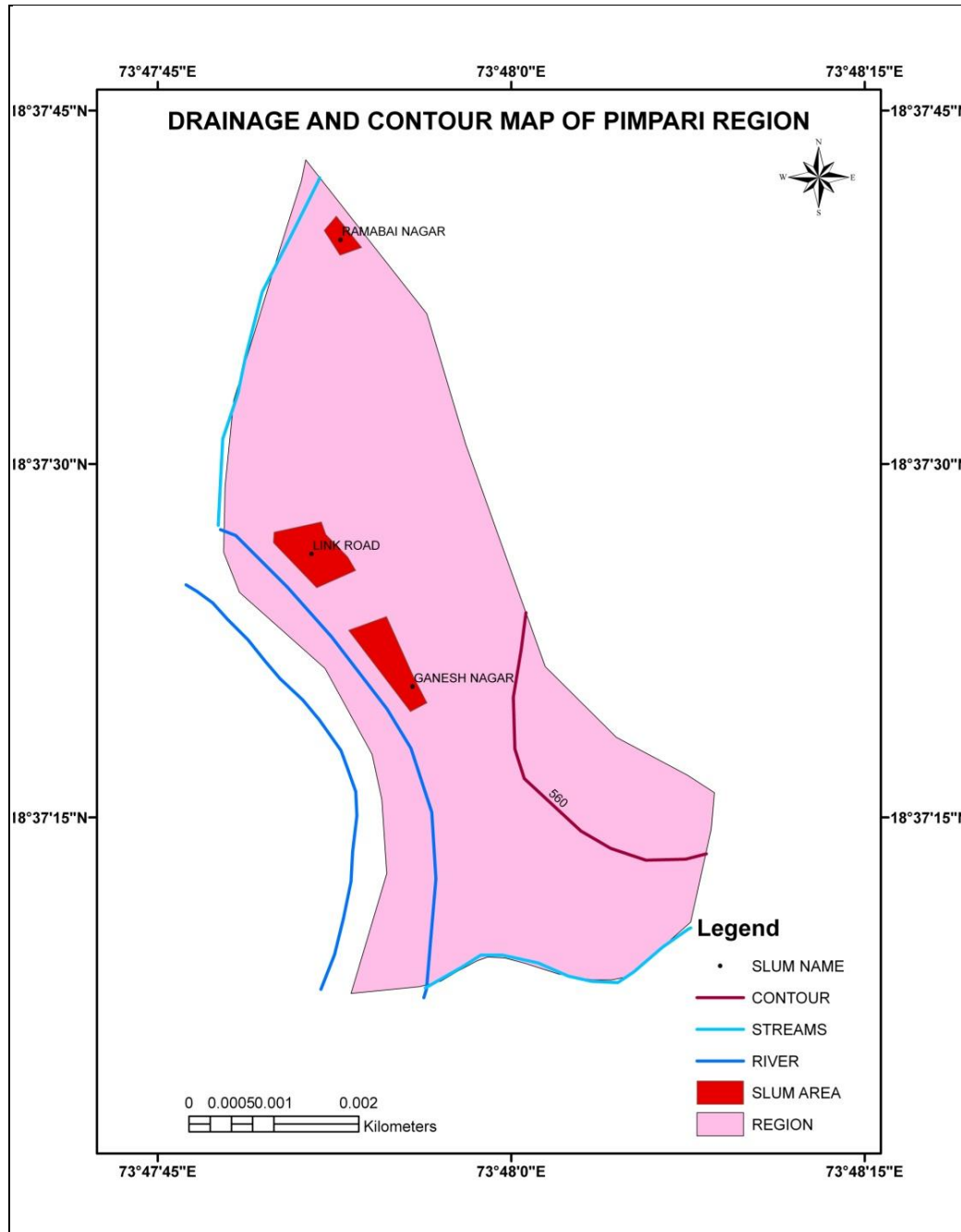
*Source: GPS Surveyed by Researcher.*

#### **6.1.3.4. Pimpri Region:**

The slope of this region decrease from east to west by 1.80%. There is only one small stream. This stream originates at north side of the region and flows from north to west and east to west towards Pawana river. The stream following through Pimpri region is first order according ordering rank of Strahler methods. The total

length of this stream is 383.37mt. (0.38kms.). this stream is located at west side of the region. In general the Pimpri region is situated on plain ground pattern of left bank of Pawana river.

**Figure No.2.18:** Drainage and Contour map of Pimpri Region.



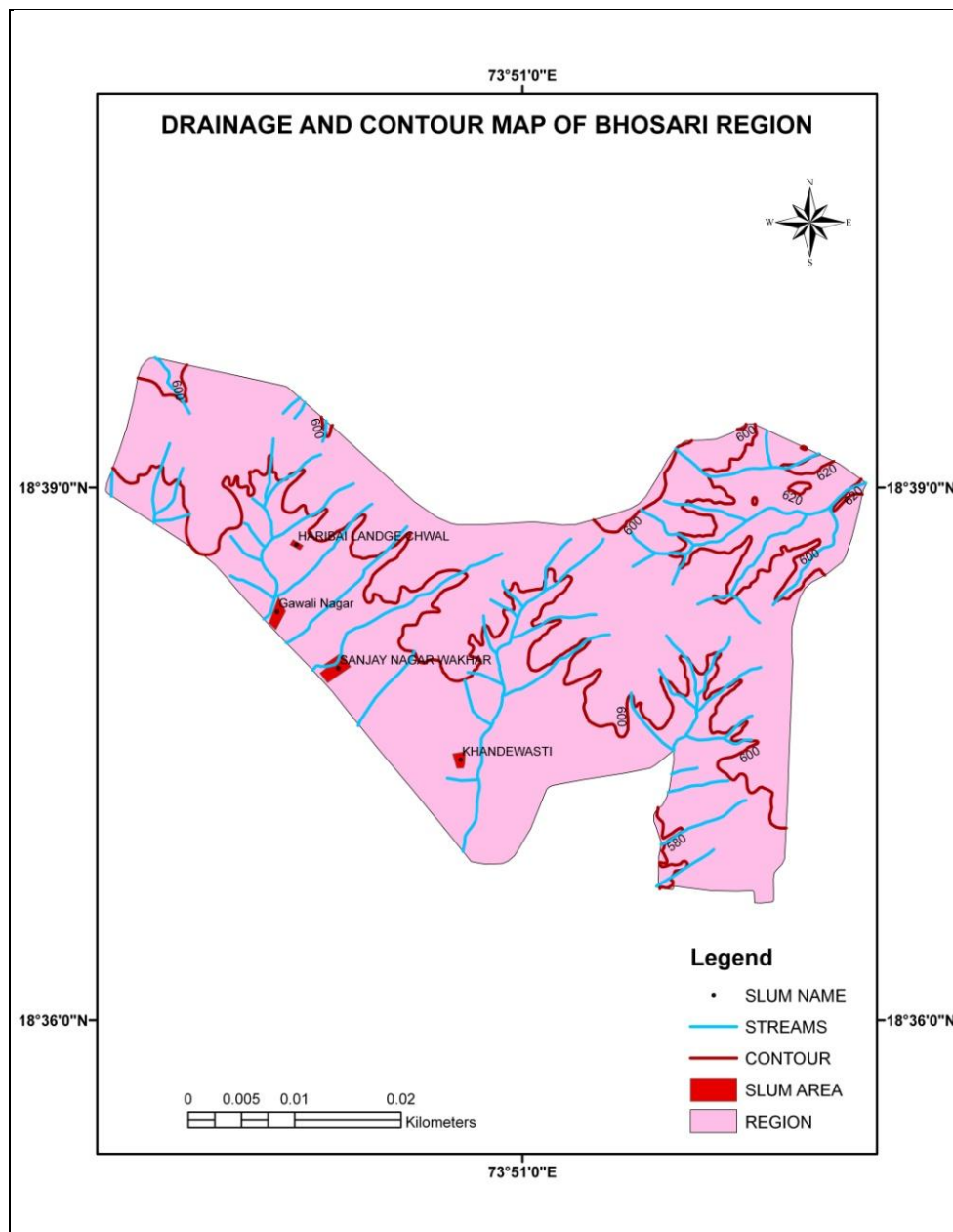
*Source: GPS Surveyed by Researcher.*

#### **6.1.3.5. Bhosari Region:**

The slope of this region decrease from North to south by 4.17% and north to east by 5.00%. There are about forty four small streams. few streams originate at middle north side and flows from north to west and south towards Pawana river and

other few streams are originates at north side and flows from north to east side towards Indrayani river. The streams following through Bhosari region is third order according ordering rank of Strahler methods. The total lengths of these all streams are 35564.50mt. (35.56kms.). Out of all streams, few streams are located at east side of the region and other few streams are located at Middle Western side of the region. In general the Bhosari region is situated on plain area with hillock at left bank of Pawana river and right bank of Indrayani river.

**Figure No.2.19:** Drainage and Contour map of Bhosari Region.

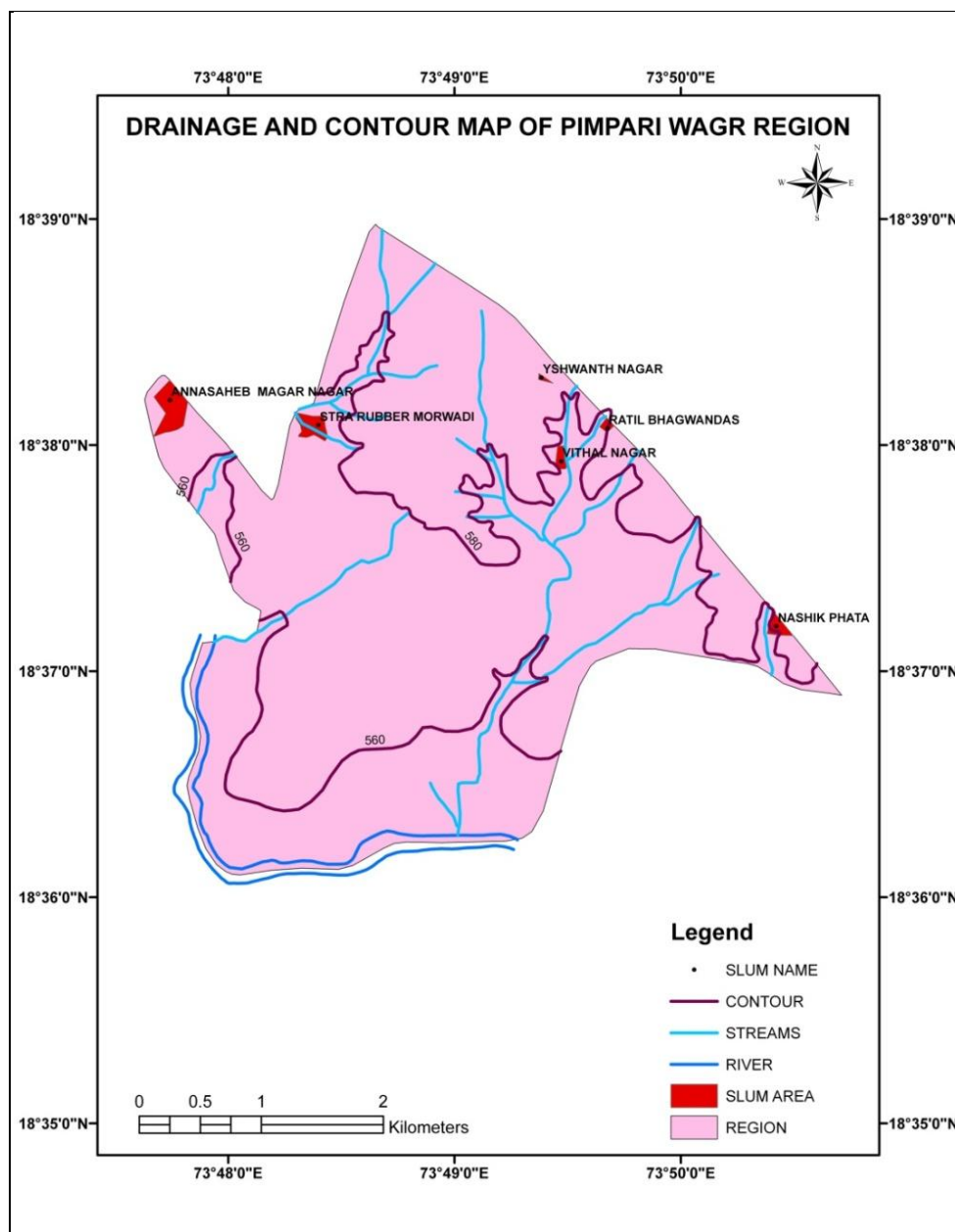


*Source: GPS Surveyed by Researcher.*

### 6.1.3.6. Pimpri-Waghare Region:

The slope of this region decrease from North east to south east by 1.90%. There are about eighteen small streams. All these streams originate at North and north east side and flow from north east to southwest towards Pawana river. The stream following through Pimpri Waghare region is third order according ordering rank of Strahler methods. The total length of these all streams is 18078.02mt. (18.08kms.). Out of all streams, few streams are located at east side of the region and other few streams are located at north side of the region. In general the Pimpri waghare region is situated on plain ground pattern of left bank of Pawana river.

**Figure No.2.20:** Drainage and Contour map of Pimpri Waghare Region.

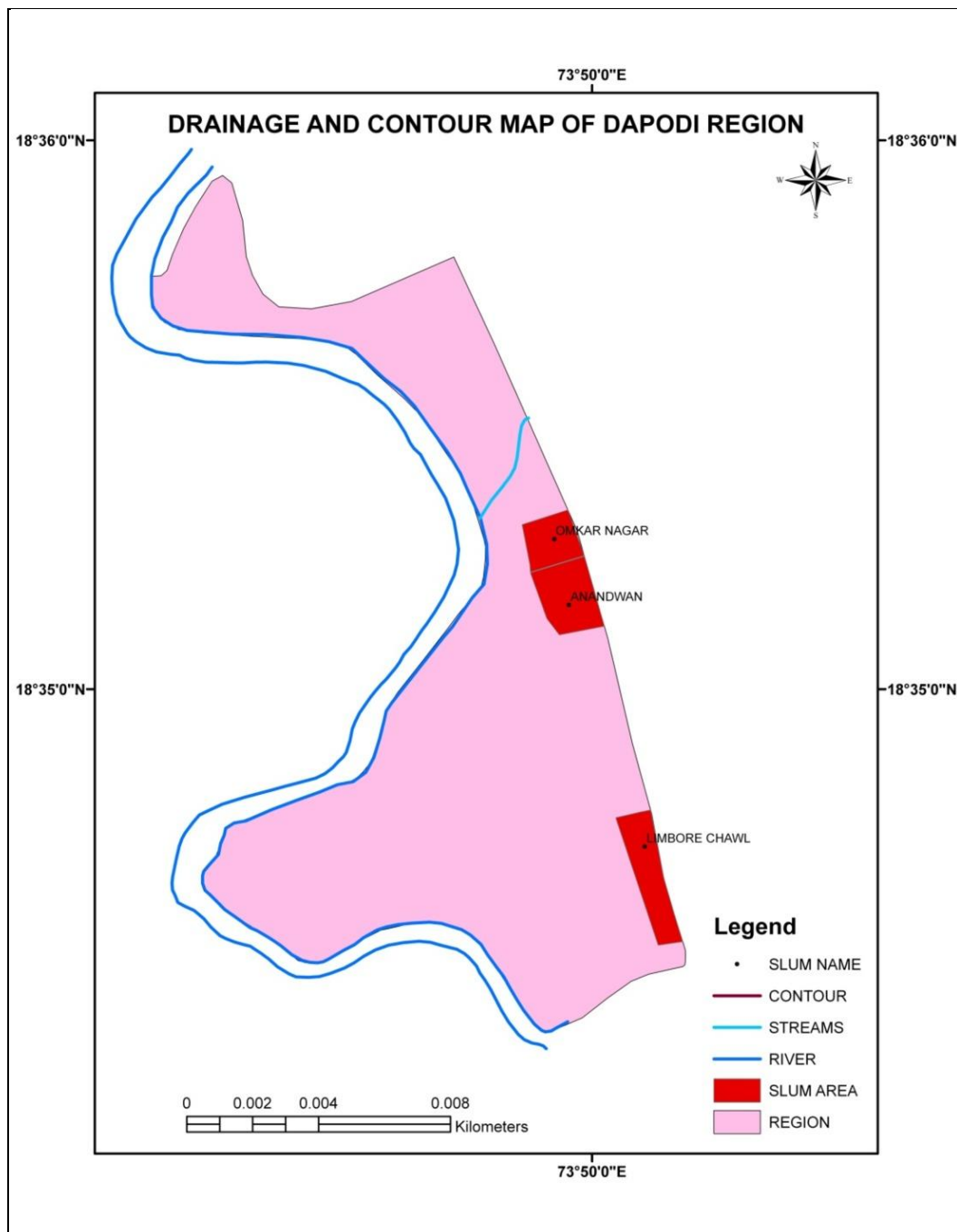


*Source: GPS Surveyed by Researcher.*

### 6.1.3.7. Dapodi Region:

The slope of this region decrease from East to West by 1.80%. There is only one small stream. This stream originates at east side and flows from east to west towards Pawana river. The stream following through Dapodi region is first order according ordering rank of Strahler methods. The total length of this stream is 410.40mt. (0.41kms.).This stream is located at west side of the region. In general the Dapodi region is situated on marshy plain ground at left bank of Pawana river.

**Figure No.2.21:** Drainage and Contour map of Dapodi Region.

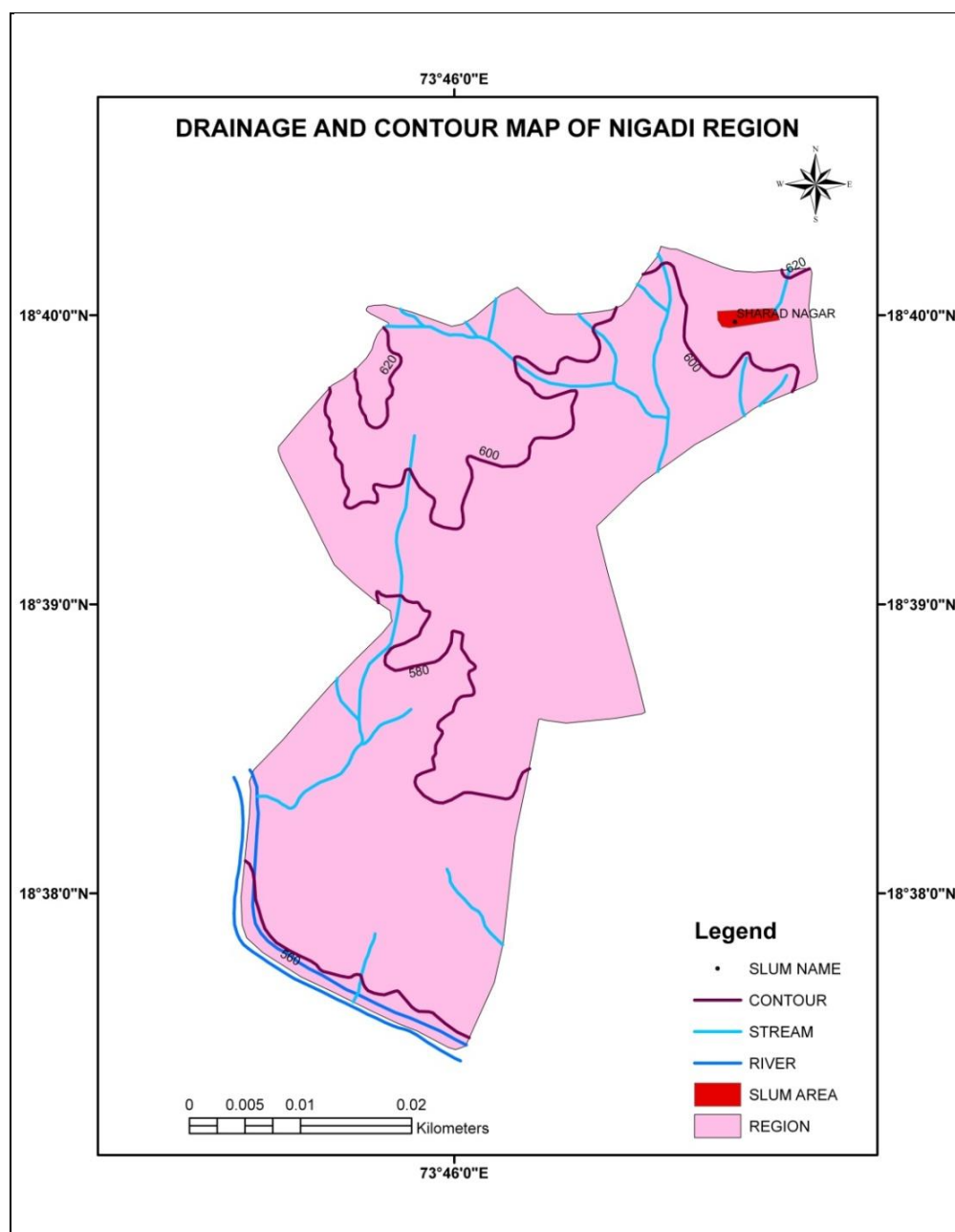


*Source: GPS Surveyed by Researcher.*

### 6.1.3.8. Nigadi Region:

The slope of this region decrease from North to south by 3.31%. There are about fifteen small streams. All these streams originates at North and west side and flows from north to south towards Pawana river. The stream following through Nigadi region is third order according ordering rank of Strahler methods. The total length of these all streams is 10546.77mt. (10.55kms.). Out of all streams, few streams are located at north side of the region and other few streams are located at west side of the region. In general the Nigadi region is situated on hillock at left bank of Pawana river.

**Figure No.2.22:** Drainage and Contour map of Nigadi Region.

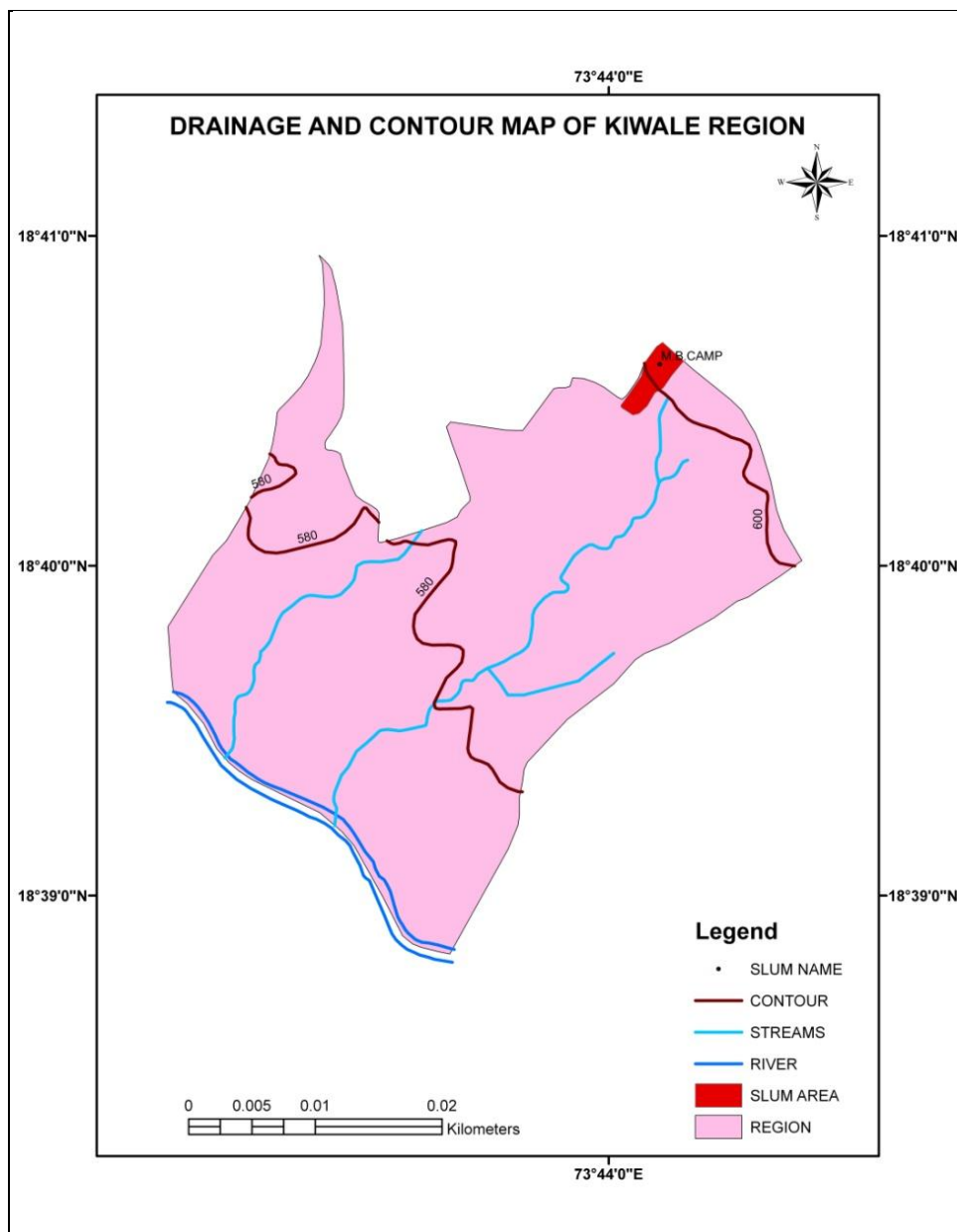


*Source: GPS Surveyed by Researcher.*

### 6.1.3.9. Kiwale Region:

The slope of this region decrease from Northeast to southwest by 2.33%. There are about four small streams. All these streams originate at Northeast side and flows from northeast to southwest towards Pawana river. The streams following through Kiwale region is Second order according ordering rank of Strahler methods. The total length of these all streams is 6445.95mt. (6.55kms.). Out of all streams, few streams are located at northeast side of the region and other few streams are located at southwest side of the region. In general the Kiwale region is situated on narrow strip of plain ground at left bank of Pawana river.

**Figure No.2.23:** Drainage and Contour map of Kiwale Region.



*Source: GPS Surveyed by Researcher.*

The natural streams passing through the different study regions were observed and analyzed with map to get the actual status of streams and situational background of study area.

#### **6.1.4. Climate of study area:**

Tropical climatic condition of the study area with their three distinct seasons: Summer, Monsoon and winter. The summer seasons are from March to May maximum temp. is 35°C to 39°C and hottest month is April. The Monsoon season in between June to September due to south west monsoon wind with receiving moderate rainfall and annual mean rainfall is 772 mm. The winter seasons from November to February. This weather is very agreeable the average temperature is between 10°C to 29°C the coldest month is December. Minimum temperature goes down to 10°C. The highest temperature recorded on dated 7<sup>th</sup> May 1889 and 30<sup>th</sup> April 1987. It is 43.3°C and the lowest temperature on dated 17<sup>th</sup> January 1935. It is 1.7°C. (*City Development Plan Report of PCMC, 2006-2012.*)

#### **6.2. Assessment of Human aspects in study area:**

A continuing increase in the number and size its include area and population of towns and cities is characteristic feature of social and economic development throughout the world. Urban centers have always been considered the nucleus of human civilization and culture. The activities are different it's grown from the rural to urban area. (*L.N.P. Mohanty & Swati Mohanty.*)

Any settlement may be the rural, urban or slum required to be supported by some of manmade factors. Usually in rural areas, functions are mostly primary but in the urban area they are more diversified like trade, communications, industry, administrative zones, tourist zone, and so on. The population in any settlement always struggle for getting the resource to fulfill their needs and wants. These factors are basically determined the relative situation of the study area.

##### **6.2.1. Urban Settlement of study area:**

Growth of Slum is one of the major characteristics of modern urbanization. It was not until the 19th century that, there was a potential for the development of cities of any size, but there after cities were gowned up partly due to increase in agricultural surplus, improved transportation, administrative and political stability. Ratna N. Rao All these factors forced to increase the population of Pimpri Chinchwad urban area and due to it there founds growth of slums and urban settlement in this area.



Pimpri Chinchwad, its modern twin city situated south east of Mumbai and north west of Pune. Pimpri Chinchwad also happens to be fifth most populated city of Maharashtra and has long been famous for being one of the most prominent industrial destinations outside Mumbai. This city is located 15 kilometers from Pune city center. They form continuous urban stretch, adding to the overall Pune urban agglomeration and contain a thriving industrial belt that primarily consists of engineering and automobile industries, development of the Pimpri Chinchwad. Date back to the establishment of industries in middle of the 20<sup>th</sup> century. The urban settlement development of Pimpri Chinchwad has happened almost entirely along the old Mumbai Pune highway. If one looks beyond the first or second row of houses lining the main roads, one does not find any appreciable level of urban settlement the areas. Still retain their rural character civic amenities like shopping complexes and hospitals area also situated along the Mumbai Pune highway only. The establishment of the Pimpri Chinchwad New Town Development Authority (PCNTDA) affordable housing was provided by PCNTDA and availed of by a large number of workers and lower and Middle income group citizens. Also employment to industrial workers and of late has emerged as an affordable urban destination for residential Purposes. (*City Development Plan Report of PCMC, 20062012*).

The observation made while studying the slums in Pimpri Chinchwad urban area that they are settled to near of urban functions. Most of urban functions are responsible for emergence and growth of slum settlement. These nearest urban function of slums are follows.

**Table No. 2.4.** Urban functions & services in the proximity of slums

Sr. No.	Name of Region	Name of Pockets	Nearest Urban Functions
1	Akurdi	Jay Malhar Nagar	Industry, Mall, Roadways
		Nagesh Nagar	Educational Center, Market, Railway Line
		Ajanta Nagar	Industry, Market, Mall
2	Chinchwad	Anand Nagar	Mall, Market, Hospital, Roadways, Railway Line
		Saibaba Nagar	Industry, Road Ways, Railway Line

		Udyog Nagar	Industry, Market, Road Ways
		Santosh Nagar	Industry, Railway Line, Road Ways
3	Wakad	Kalakhadak	Market, Educational Center, Road Ways
		Tapkir Nagar	Mall, Road Ways, Educational Center
		Annabhau Sathe Nagar	Market, Roadways, Educational Center
4	Pimpri	Ganesh Nagar	Educational Center, Mall, Market
		Ramabai Nagar	Market, Administrative Zone
		Link Road	Market, Administrative Zone, Educational Center
5	Bhosari	Sanjay Nagar Wakhar	Market, Educational Center, Road Ways
		Gavali Nagar	Educational Center, Administrative Zone, Industry
		Hirabai Landge Chwal	Educational Center, Road Ways, Market
		Khandewasti	Industry, Road Ways
6	Pimpri Waghere	Vithal Nagar	Industry, Educational Center, Administrative Zone, Road Ways
		Yashwant Nagar	Industry, Educational Center
		Star Rubber Morwadi	Industry, Administrative Zone, Mall, Educational Center
		Anasaheb Magar Nagar	Industry, Educational Center, Administrative Zones
		Nashik Phata	Industry, Mall, Road Ways, Railway Line
		Ratilal Bhagawandas	Industry, Hospital, Road Ways,

			Railway Line
7	Dapodi	Limbore Chwal	Mall, Market, Education Center, Road Ways, Railway Line
		Anandwan	Mall, Market, Education Center, Road Ways, Railway Line
		Omkar Nagar	Mall, Market, Education Center, Road Ways, Railway Line
8	Nigadi	Sharad Nagar	Industry, Education Center, Road Ways
9	Kiwale	M.B. Camp	Education Center, Road Ways, Railway Line

*Source: Own Sample Surveyed*

**6.2.2. Transport network and connectivity of study area:**

Pimpri Chinchwad is well connected by road, rail and air. Pimpri Chinchwad is situated along the old Mumbai Pune National highway (NH-4). It has a state Transport bus stand Pimpri Chinchwad bus stand at VallabhaNagar. Pune MahaNagar Parivahan Mahamandal Limited. (Formed by merger of PCMT and PMT) operates the public transport system in this area. The Maharashtra government has proposed metro connectivity to Pimpri Chinchwad under the Pune metro project. A BRTS system is also under construction in this area. Rail network is extremely well connected to most important cities in India. Like Mumbai, Hyderabad, Bangalore, Delhi, Kolkata and Chennai with broad gauge rail line. Pune suburban trains also run from Pune Junction to Lonawala through the Pimpri Chinchwad urban area. The main railway stations for this area are Pimpri, Chinchwad, Akurdi, and Nigadi railway station. The nearest airport is Pune airport at Lohagaon with while the Maharashtra Government Planning to set up a new airport near Chakan. Pune now has an International Deemed airport with flights to Singapore and Dubai. Domestic flights are available to most metropolitan cities in India. (*City Development Plan Report of PCMC, 2006*).

Transportation network plays vital role in the development of the urban areas. The well connectivity of roads, railway lines and air ways has greatest important of the city or urban area. The growth and development of the urban area later on results to have origin and growth of slum pockets.

The Pimpri Chinchwad urban area has get benefited by the well connected roads which includes the National highways, State highways and major internal connecting roads. The old National highway connects the core of the Pune city to Mumbai passing through different stations in Pimpri chinchwad urban area like, Dapodi, Kasarwadi, Pimpri, Chichwad, Akurdi, Nigadi, Dhehuroad and Kiwale and also connects the railway line Pune to Mumbai Passing through different railway stations in Pimpri Chinchwad urban area like, Kasarwadi, Pimpri, Chinchwad, Akurdi, Dehuroad etc. Pimpri Chinchwad urban area has many industrial units, educational centers, administrative offices, trade centre, and no. of hospitals they are very well connected by internal road network as well as state highway and national highway network. Most of slums in Pimpri Chichwad urban areas located near to roadways and railway line therefore transport network is responsible for origin and growth of slums.

Jay Malhar Ganesh Nagar slum is located at western side of the Akurdi region. It is close to old Mumbai-Pune national highway it is 100mt away at east side of highway. Another slum in Akurdi region is Nagesh Nagar slum. This slum is located at western side of Akurdi region. It is situated 2km away at south east side of the Akurdi railway station and close to the Mumbai-Pune railway line where same slum is close to Chinchwad-Akurdi subway and 1km away at Kalewadi-Akurdi subway and also 5km away at west side of old Mumbai-Pune highway. Third slum in Akurdi region is Ajanta Nagar slum. This slum is located at northern side of Akurdi region. It is situated 3km away at east side of old Mumbai-Pune highway where same slum is close to Thermax chowk. This chowk is well connected with Akurdi, Bhosari, Nigadi, Chichwad, and Chikhali road. Anand Nagar slum is located south side of Chinchwad region. It is close to Mumbai-Pune railway line and Old Mumbai-Pune highway it is 50mt away at east side of railway line and 1km away at south side of Chinchwad railway station where same slum is 100mt away at west side of old Mumbai-Pune highway. Another slum in Chichwad region is Saibaba Nagar slum. This slum is located at west side of Chinchwad region it is close to Mumbai-Pune railway line and old Mumbai-Pune highway also it is very close at east side of Chichwad railway station where same slum is 1km away at west side of old Mumbai-Pune highway. Third slum in Chinchwad region is Udyog Nagar slum. This slum is located at centre part of the Chinchwad region it is close to the Mumbai-Pune railway line at west side of this railway line and 3km away at north side of Chinchwad railway station where

same slum is close to the Akurdi-Chinchwad subway road. Forth Slum in Chinchwad region is Santosh Nagar slum. This slum is located at south east side of the Chinchwad region. This slum is well settle near roadway and railway line it is 100mt away at east side of railway line and 5kms away from Chinchwad railway station same slum is 1km away at west side of old Mumbai-Pune highway and close to the Chinchwad-Pimpri Subway road. Kalakhadak slum is located at northwest side of Wakad region. It is close to Mumbai-Bangalore Express way it is 100mt away at northern side of express way where same slum is to the Chinchwad-Hinjawadi subway road. Another slum in Wakad region is Tapkir Nagar slum. This slum is located at east side of Wakad region. It is situated in inside of Chinchwad-Hinjawadi road, Pimpri-Hinjawadi subway road, Kalewadi-Thathwade subway road and Kalewadi-Chinchwad subway road. It is very close to this all road ways. Third slum in Wakad region is Annabhau Sathe Nagar slum. This slum is located at north side of Wakad region. It is 1km away at south side of Mumbai- Bangalore Express way and close to Kalewadi-Wakad subway road.

Ganesh Nagar slum is located at south west side of Pimpri region near to Pawana river it is close to river at west side of slum and it is also close to Pimpri-Kalewadi subway at east side of slum. Another slum in Pimpri region is Link road slum. This slum is located at west side of Pimpri region. It is close to the Pawana river at west side of slum and also close to the Pimpri-Kalewadi subway road at south side of the slum. Third slum in Pimpri region is Ramabi Nagar slum. This slum is located at northern side of Pimpri region and it is close at north side of Pimpri-Chinchwad subway road. Sanjay Nagar wakhar slum is located at west side of Bhosari region. It is 500mt away at west side of Pune-Nashik highway. Another slum in Bhosari region is Gawali Nagar vasahat slum. This slum is located at west side of Bhosari region. It is very close at south side of Bhosari-Chinchwad subway road and where same slum is 1km away at north side of Bhosari-Pimpri subway road and 6km away at old Mumbai-Pune highway. Third slum in Bhosari region is Hirabai Landage Chwal slum. This slum is located at north side of Bhosari region. It is 200mt away at west side of Pune-Nashik highway and close to subway road. Forth slum in Bhosari region is Khandewasti slum. This slum is located at south side of Bhosari region. It is 1km away at north side of Bhosari-Chinchwad subway road and 5km away at west side of Pune-Nashik state highway. Vitthal Nagar slum is located at east side of Pimpri Waghere region it is 100mt away at south side of Bhosari-Pimpri road and 1km away

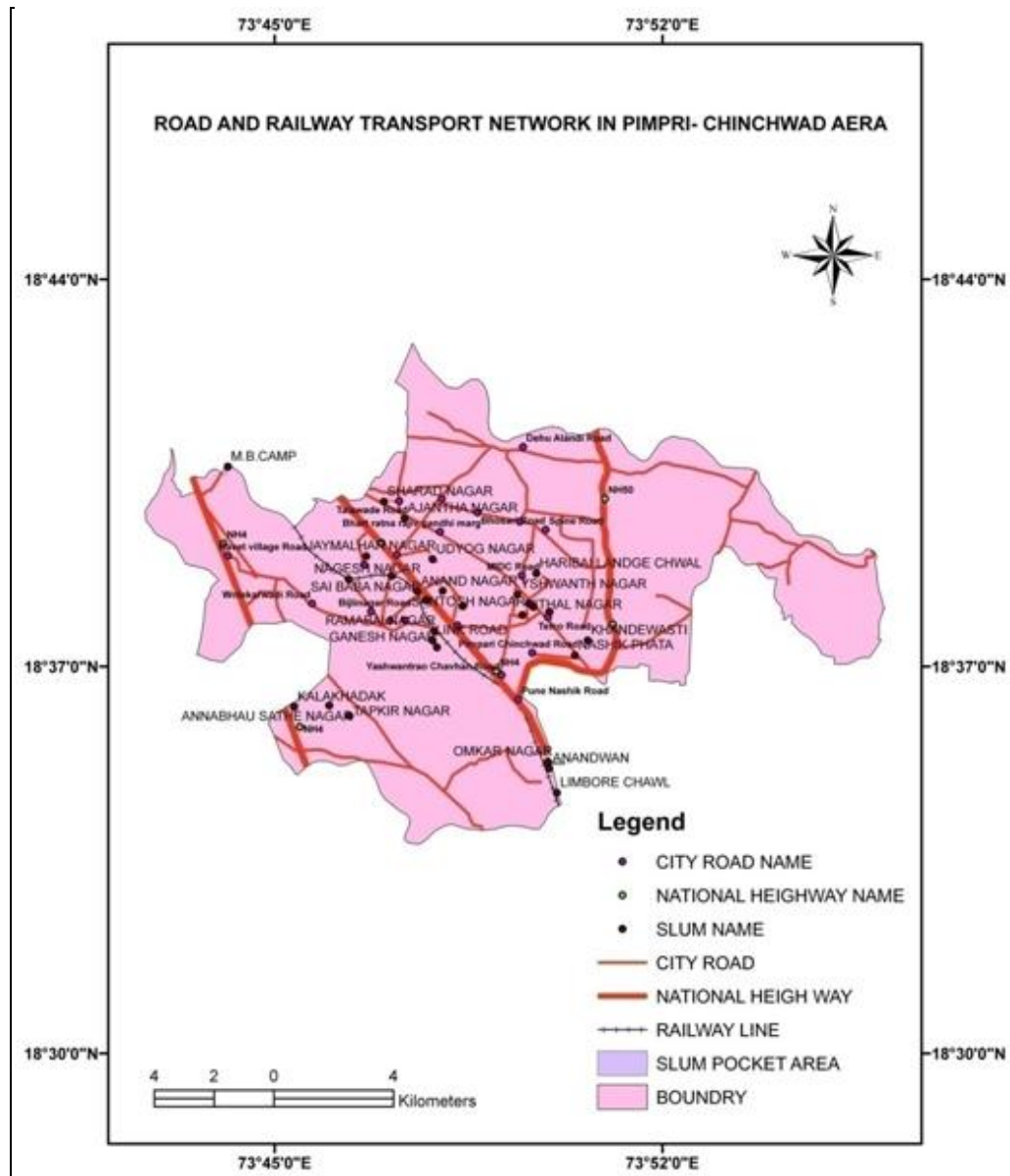
at south side of Bhosari-Chinchwad subway road where same slum is 4km away at east side of old Mumbai-Pune highway. Another slum in Pimpri Waghere region is Star Rubber Morewadi slum. This slum is located at northwest side of Pimpri Waghere region. It is 1km away at east side of old Mumbai-Pune highway and very close at east side of Chinchwad-Pimpri subway road. Third slum in Pimpri Waghere region is Annasaheb Magar Nagar slum. This slum is located at west side of Pimpri Waghere region. It is very close at east side of old Mumbai-Pune highway. Fourth slum in Pimpri Waghere region is Nashik Phata slum also known as Ambedkar Nagar this slum is located at southeast side of Pimpri Waghere region. It is close to at north side of Bhosari-Pimpri road and close to at south side of Bhosari-Chinchwad subway road where same slum is 500mt away at north side of Pune-Nashik highway and 5km away at north side of old Mumbai-Pune highway. Fifth slum in Pimpri Waghere region is Ratilal Bhagwandas slum. This slum is located at east side of Pimpri Waghere region. It is 3km away at west side of Pune-Nashik highway and 7km away at east side of old Mumbai-Pune highway where same slum is 1km away at south side of Bhosari-Chinchwad subway road. Sixth slum in Pimpri Waghere region is Yashwant Nagar slum. This slum is located at north east side of Pimpri Waghere region. It is 1km away at North side of Bhosari-Pimpri road and it is a very close at south side of Bhosari-Chinchwad subway road where same slum is 5km away at east side of old Mumbai-Pune highway.

Limbore chwal slum is located at south side of Dapodi region. It is very close at west side of old Mumbai-Pune highway where same slum is 500mt away at east side of Mumbai-Pune railway. Another slum in Dapodi region is Anandwan slum. This slum is located at east side of Dapodi region it is very close at east side of Mumbai-Pune railway line and also close at west side of old Mumbai-Pune highway where same slum is 50mt away at north side of Dapodi-Pimple Gurav subway road. Third slum in Dapodi region is Omkar Nagar slum. This slum is located at east side of Dapodi region it is very close at east side Mumbai-Pune railway line and also very closes at west side of old Mumbai-Pune highway where same slum is 200mt away at north side of Dapodi-Pimple Gurav subway road. Sharad Nagar slum is located at northeast side of Nigadi region. It is 2km away at east side of old Mumbai-Pune highway and very close at east side of Nigadi-Yamuna Nagar road also it is 100mt away at north side of Bhosari-Nigadi subway road. M. B. Camp slum is located at northeast side of Kiwale region. It is very close at west side of Mumbai-Pune railway

line and 1km away at Dehuroad railway station where same slum is 100mt away at west side of old Mumbai-Pune highway and 2km away at east side of Mumbai-Pune Express highway.

All these slums are situated to near and close at railway line, subway road, internal road, major road, state highway, national highway and expressway road due to transport network is responsible for origin and growth of slums.

**Figure No.2.24.** Transport network and connectivity of study area.



*Source: GPS Surveyed by Researcher.*

### 6.2.3. Industrial Clusters of Study area:

Pimpri Chinchwad is a major Industrial hub and hosts one of the biggest industrial zones in Asia. Industrialization dates back to 1956 with starting of Hindustan Antibiotics Limited considering this opportunity MIDC took initiative and bought huge scale land in this area. This town is home to the Indian operations of major automobile companies like Premier limited, Mahindra Navistar, Bajaj auto, Tata Motors (TELCO), Kinetic engineering, Force Motors, Thermax and Auto line industries in addition to this several heavy industries such as Forbes Marshall, Thyssenkrupp, Alfa Laval and Sandvik Asia have their Manufacturing units in the town and also the German company, KSB Pumps, Swedish bearing company, SKF, Rajiv Gandhi InfoTech park hosts several software and Information Technology majors like Cognizant, Accenture, IBN India, KPIT Cummins, Tata Technologies, Infosys, Wipro, Geometric Limited. (*City Development Plan Report of PCMC, 2006*).

Various factors are responsible for emergence of slum in most of developing country of the world and India some of major contributory factors are responsible for the growth of slum like industrial sector or units in Pimpri Chinchwad urban area during the early period. The large population migration from rural to urban areas for the job opportunities and getting and attraction of the amenities. Out of total slum in Pimpri Chinchwad urban area six slums are situated to close and near of industrial units. These industrial units are responsible for emergence and growth of urban area and slum. It can be summarized follows:

Akurdi region is located at west side of Pimpri Chinchwad urban area some industrial units are Located at Akurdi region like, Termax industry, Bajaj industry and Kinetic Engineering these are major industrial units. Ajanta Nagar slum is located at north side of Thermax industry this slum is 200mt away from Thermax industry where same slum is 3km away at north east side of Bajaj industry and 2km away at north side of Kinetic Engineering and some minor and small industrial units are situated at all side of Ajanta Nagar slum due to most job opportunities are available here. 28.91% Population are working in nearest industrial units in Akurdi region (*Source: own Sample surveyed*)

Bhosari region is located at east side of Pimpri Chinchwad urban area it is major industrial sector of Pimpri Chinchwad Municipal Corporation. Some small scale and large scale industrial units are situated in Bhosari region like, Ulka Pvt. Ltd., Ratna Engg., Anukul industry, Reliance Info., Centuryinka industry and Thermax



industry these are major industrial units. Gavali Nagar vasahat slum is located at west side of Bhosari region it is 1km away at south side of Quality circle and Reliance Info and some small industrial units are situated at near of Gavali Nagar vasahat slum. Another slum is Khandewasti slum this slum is located at south east side of Bhosari region it is 2km away at south side of Ratna Engg. And 500mt away at south side of Ulka industry and some small scale industrial units are situated at all side of Khandewasti slum. 37.43% Population are working in nearest industrial units in Bhosari region (*Source: own Sample surveyed*)

Pimpri Wagher region is Major industrial sector of Pimpri Chinchwad Municipal Corporation. Several heavy industries are located at Pimpri Waghere region like, Tata Motors (Telco), Thyseenkruupp, H. A. Company and some small scale industrial units. Pimpri Waghere region is located at south west side of Pimpri Chinchwad urban area. Yashwant Nagar slum is located at northeast side of Pimpri Waghere region it is 500mt away at southeast side of Tata Motors where same slum is 2km away at south side of small industrial units. Another slum is Star Rubber Morewadi slum this slum is located at northwest side of Pimpri Waghere region it is 2km away at south side of Thyseenkruupp industry where same slum is very close at south side of small industrial units. Another slum is Annasaheb magar slum this slum is located at west side of Pimpri Waghere region it is 3km away at west side of small industrial units. 22.11% Population are working in nearest industrial units in Pimpri Waghere region (*Source: own Sample surveyed*)

All these large scale and small scale industrial units are responsible for emergence and growth of slum or urban area.

#### **6.2.4. Street Lighting of Study area:**

The provision and maintenance of street lights is obligatory function of Pimpri Chinchwad urban area. The electricity department of PCMC is responsible for the installation, replacement, repairs, operation, and maintenance of streetlight in the city. There are about 37,783 street light poles including (Tube lights, sodium vapor lamps, mercury lamps, halogen lamps and other). In the Pimpri Chinchwad city with different types of electrical fixtures. 83 percent of fixtures are high power lamps, mainly sodium vapor lamps of various wattages, 16 percent of the fixtures are tube light. Against the available road length of 757 km. in the PCMC limits. The average spacing of streetlight poles works out to about 20 meters with rates well against the norm of 30 meters. (*City Development Plan Report of PCMC, 2006-2012.*)

In urban area almost every slum were electrified. The electricity connection in slum may be different type Such as, household, street light or both of these. In Slum Street light were found in at inside of the slum at the boundary of the slums. (*Condition of urban slum, 2002*) It is observed street light poles there are available for 26 slum huts in poor condition and 2 slum huts are without street light. In slum street light were found 26 slum huts are electrified with street light and household but electricity connection was not available only 2 slum huts.

**Table No.: 2.5:** Availability of Electricity Connection.

Sr. No.	Name of Region	Name of Slum Pockets	No. of Street light
1.	Akurdi	Ajanta Nagar	12
		Nagesh Nagar	09
		Jay Malhar Nagar	03
2.	Chinchwad	Saibaba Nagar	12
		Udyog Nagar	17
		Anand Nagar	42
		Santosh Nagar	03
3.	Wakad	Kalakhadak	15
		Tapkir Nagar	04
		Annabhau Sathe Nagar	00
4.	Pimpri	Ganesh Nagar	09
		Ramabai Nagar	28
		Link Road	04
5.	Bhosari	Gavali Nagar	38
		Sanjay Nagar Wakhar	08
		Hirabai Landage Chwal	17
		Khandewasti	00
6.	Pimpri Waghere	Star Rubber Morewadi	16
		Yashwant Nagar	9
		Vitthal Nagar	22
		Annasaheb magari Nagar	10
		Nashik Phata	42
		Ratilal Bhagwandas	03
7.	Dapodi	Limbore Chwal	18

		Anandwan	21
		Omkar Nagar	18
8.	Nigadi	Sharad Nagar	07
9.	Kiwale	M.B.Camp	00

*Source: Own Sample Surveyed*

Having streetlight in the slum will become the motivational facility to the slum dwellers. Which can promote the growth of slum in the urban area.

#### **6.2.5. Administrative Blocks and Zones of Study area:**

The election wards are grouped in to four wards. Specifically for administrative purpose and are termed as administrative wards are A, B, C and D. the executive wing is headed by the commissioner, who is the chief executive head and looks after the city administrative set up comprises the additional commissioner, assistant commissioner, city engineer and additional engineers, medical officer of health and the heads of department Viz. electrical, education, garden, town planning, octroi etc. The PCMC has a huge organizational structure with 43 departments; to carry out a functional analysis of the organization it is important to understand the functional needs of the customer segments internal or external. Along with this the synergy between functions, the location or geographical needs of the function and the current shortcoming or problems faced have to be considered. (*City Development Plan Report of PCMC, 2006-2012*).

Administrative blocks in the urban area always be an important part of urban settlement. The many basic supports, services and facilities were catered to the public through the administrative offices. The same way settlement of administrative block will provide the temporary jogs or work to the male and female population in nearby slums. There are most of administrative offices in Pimpri Chinchwad urban area. which includes, the sub divisional court, municipal office, police station, consumer office, post office, collector office, telephone office, electricity office, life insurance corporation office (LIC), Bharat Sanchar Nigam limited (BSNL), Road transport office (RTO), Maharashtra industrial development corporation (MIDC), National AIDS research institute (NARI) and other offices of the government located especially in different part of Pimpri Chinchwad urban area.

In Akurdi region Bharat Sanchar Nigam limited (BSNL) office is located at 2kms away at east side of Ajanta Nagar slum also police station is located at 3kms away at south side and 2kms away at north side of Ajanta Nagar slum in Akurdi

region. Collector office is located at 3kms away at south side of Jay malhar Nagar slum. Another life insurance corporation office (LIC) is located at 3kms away at south side of Jay malhar Nagar slum. Road transport office (RTO) office is located 3kms away at Ajanta Nagar slum in Akurdi region. In Chinchwad region collector office is located at very close at east side of Anand Nagar slum and Saibaba Nagar slum also a very close at west side of old Mumbai-Pune highway and east side of Mumbai Pune railway line. Also police station is located at close of collector office. Life insurance corporation office (LIC) is located at 2kms away at north side of Anand Nagar slum and 1.5kms away at north side of Saibaba Nagar in Chinchwad region slum. Post office, municipal office and Maharashtra industrial development corporation (MIDC) office is located a very close at northwest side of Chapher chowk and 3kms away at north side of Chinchwad Bus stand. In Waked region different administrative zones are located. Such as, police station and police line. It is close to at north side of Annabhau sathe Nagar and 2kms away at east side of Kalakhadak slum. Another police station is located 3kms away at south side of Kalakhadak slum. In Pimpri region Municipal office is located 2km away at east side of Ramabi Nagar slum and 3km away at east side of Link road slum and Ganesh Nagar slum in Pimpri region. Tahasil office is located very close of at east side of Ramabi Nagar slum. Police station is located at 2kms away at south east side of Ramabai Nagar slum in Pimpri region.

In Bhosari region Municipal office is located at 1km away at east side of Gavali Nagar vasahat slum. Tahsil office and police station is located 3km. away at South side of Sanjay Nagar wakhar slum. Maharashtra industrial development corporation (MIDC) office is located at 3kms away at north side of Kandewasti slum. Another National AIDS research institute (NARI) of India is located at 3kms away at east side of Gavali Nagar vasaht slum, 2kms away at southeast side of Khandewasti slum and 4kms away at South side of Sanjay Nagar wakhar in Bhosari region. In Pimpri Waghere region Pimpri Chinchwad Municipal Corporation building is located 1kms away at south side of Star rubber morewadi slum and 3kms away at west side of Yashwant Nagar and Vitthal Nagar slum. Road transport office (RTO) and police station is located 2kms away at east side of Vittal Nagar and Yashwant Nagar slum. Also 2kms away at south side of Star rubber morewadi slum in Pimpri Waghere region. Sub divisional court is located a very close at east side of Star rubber morewadi slum. And also collector office is located 500mt at west side of Annasaheb

magar Nagar slum in Pimpri Waghere region and close to old Mumbai-Pune highway. In Dapodi region Tahsil office is located at a very close at south side of Anandwan and omkar Nagar slum and police station is located 2kms away at south side of Limbore chwal and 4kms away at Omkar Nagar and Anandwan slum in Dapodi region. In Nigadi region Consumer office is located 2km away at west side of Sharad Nagar slum. Police station is located a close at south side of Sharad Nagar slum. Life insurance corporation office (LIC) is located 2kms away at south west side of Sharad Nagar slum and near to Bajaj industry. Bharat sanchar nigam limited (BSNL) office is located 5kms away at east side of Sharad Nagar slum in Nigadi region. In Kiwale region is located at outside of the city but close to military area due to some governmental administrative zones are located. Such as, Cantonment board office and police station. Cantonment board office is located at near to Dehuroad railway station and 2kms away at east side of M.B. Camp slum and 100mt away at northeast side of old Mumbai Pune highway. Police station is located 2kms away at northeast side of M. B. Camp slum in Kiwale region.

### **2.7. Population of Study area:**

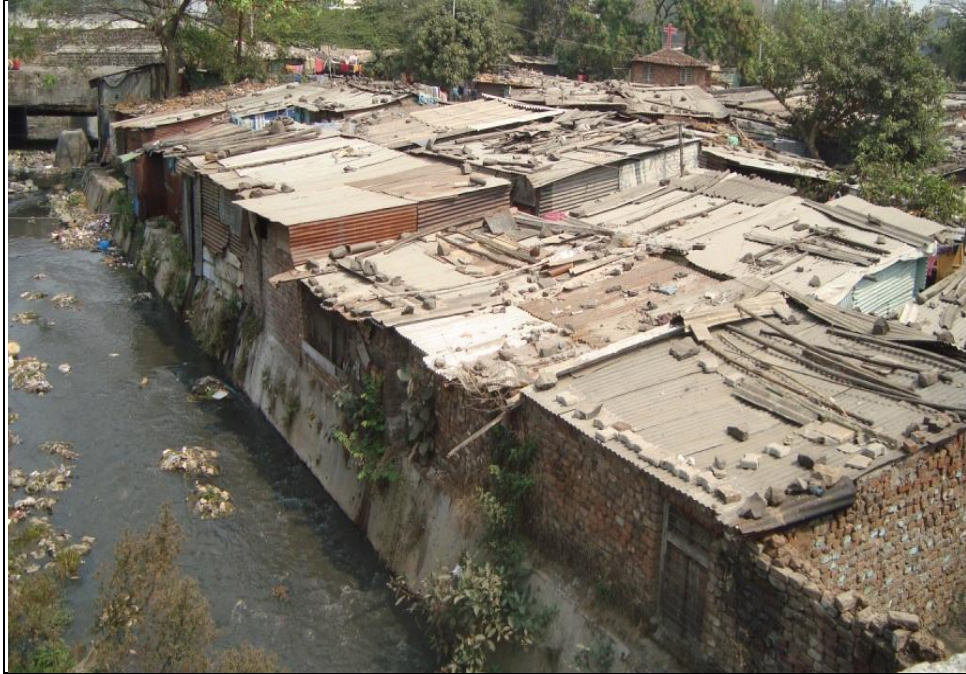
The Pune Metropolitan Regional Planning Board suggests the establishment of Pimpri-Chinchwad new township at distance of Approximately 16 Kilometers from Pune City. The main reason was to create a planned environment for the working population in the local area of their work place. The existence of slums can be traced back to the decade of industrialization in Pimpri Chinchwad. Slums have proliferated as a corollary of industrial growth in the area. The first slum survey carried out by the Municipal Council in 1976 identified 35 slum pockets (5621 hutments) with a population of 26,470. The slums were located chiefly around the industries on open lands close to the workplaces. The survey was updated by PCMC in 1987 when 65 slum pockets (21326 hutments) with a population of 96,272 persons were identified. Further, in 2002, the Government under its resolution dated 11/07/2001, carried out a slum survey which identified 71 slum pockets (35412 hutments) with a population of 1,46,054 persons. The proportion of population living in slums has decreased from 27 percent in 1971 to 13 percent in 2001, in absolute terms; there has been a rapid growth of slum population. (*City Development Plan Report of PCMC, 2006*)

As of 2011 Indian census, Pimpri Chinchwad had a Population of 17, 29,359. Pimpri Chinchwad has an average literacy rate of 87.19 percent higher than the national average of 74.04 percent. In Pimpri Chinchwad 14 percent of the population

is under six years of age, out of total population 14.56 (1, 47,810) percent population living in slum area. The main language spoken in the town is Marathi. There is a significant Sindhi population present in Pimpri.

In the second topic give the details regarding the profile of the study area its including the detailed account of Location, Site and Situations, Geographical Assessment with Natural aspects and Human Aspects, Geomorphic environment with Relief, Drainage, Geology, Climate, Human Aspects with Urban Settlement, Transport network and connectivity, Industrial clustered, Street lighting, Administrative Block and Demography structure with different characteristics. All these above factors are important role of origin and growth of slum in Pimpri Chinchwad urban area.

**PHOTOPLATE: 1. DIFFERENT LOCATION OF SLUM HUTS IN PIMPRI CHINCHWAD URBAN AREA.**



(a) Gutter side slum huts in Pimpri Chinchwad urban area



(b) River side slum huts in Pawana Nagar slum

**PHOTOPLATE: 1. DIFFERENT LOCATION OF SLUM HUTS IN PIMPRI CHINCHWAD URBAN AREA.**



(c) Small stream side slum huts in Ajanta Nagar slum



(d) Road side slum huts in Ganesh Nagar slum



## Chapter III

### **SOCIO- ECONOMIC ASSESSMENT OF SLUM POPULATION IN PIMPRI- CHINCHWAD URBAN AREA**

1. Introduction
2. Economic status of slum population in Pimpri Chinchwad urban area
  - 2.1: Average Annual income of slum families
  - 2.2: Home appliances of Slum Population
  - 2.3: Occupational status of slum population
    - 2.3.1: Sex wise occupational status of slum population
    - 2.3.2: Area wise occupational status of slum population
  - 2.4: Average Annual income with educational status of slum population
3. Social status of slum population in Pimpri Chinchwad urban area
  - 3.1: Area wise Caste status of slum Population
  - 3.2: Caste wise educational status of slum Population
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  - 4.3: Dependency Ratio of Slum Population
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## **SOCIO- ECONOMIC ASSESSMENT OF SLUM POPULATION IN PIMPRI- CHINCHWAD URBAN AREA**

### **1. Introduction:**

Socio-economic status of slum is mostly depended on education, income and occupation. Socio-economic status of slum might relate to all above key that may help to turn out whole scenario (*Sandip Tripathy, 2013.*) Socio-economic condition or status makes much effect on housing condition, living condition, life style, education, health and other all functions in slum area. The education, occupation, income, age structure and caste status all these elements are important for Socio-economic assessments of slum Population.

These slums occurred due to various factors, namely the shortage of developed land being beyond the reach of urban poor; large influx of population, rural migration to cities in search jobs and inadequate provision of basic services and infrastructural facilities in the urban areas. In general, slums are the products of failed policies, bad governance, corruption, inappropriate regulation, dysfunctional land markets, a fundamental lack of political will and irrespective financial systems. (*Sufaira C., 2013.*) Pimpri Chinchwad urban area had relatively developed industrial units, educational centers, various transport networks, hospitals and administrative offices. All these services and infrastructural facilities provide the job for unskilled and skilled worker. Most of the population migrated from surrounding rural areas, as there are greater economic opportunities in these urban areas. As urban centers attracts more number of population from surrounding region. All they don't have capacity to purchase homes in the urban area therefore this population will search the vacant open land to give raise the slum. These lands may be private land, government land, private society's lands and the lands of semi government societies. The population migrated from one different areas and environmental will made their shelter's by the way establishing slum on this land and population gathered by the way of establishing. Slum has variation in their social, economical, religious and educational background where as in slum all together this population gives rise to heterogeneous group of society. Most of population in slum area including male and female are working as unskilled labour because less education, less income and unhygienic housing condition. Socio-economic assessments of slums in analyzed as following ways;

## **2. Economic status of slum population in Pimpri Chinchwad urban area:**

The sprouting of slums in the urban area is the direct outcome of greater economic opportunities available in the cities and town. (*Sufaira C., 2013*). An assessment of economic Status mainly includes the annual income, availability of home appliances, occupational structure and Average Annual income wise education and so on. All these factors are basically determined the economical status of slum population as well as slum area.

### **2.1: Average annual income of slum families:**

Annual income of society plays important role in economic development and development of settlement in the area. The structure of houses, house material and total no. of rooms per family were also been determined by income of family. The data for average annual income of slum families was collected through the interview of families by using the questionnaire. The data is classified in three income groups; as below Rs.50, 000, Rs.50, 000 to Rs.1, 00,000, and above Rs.1, 00,000.

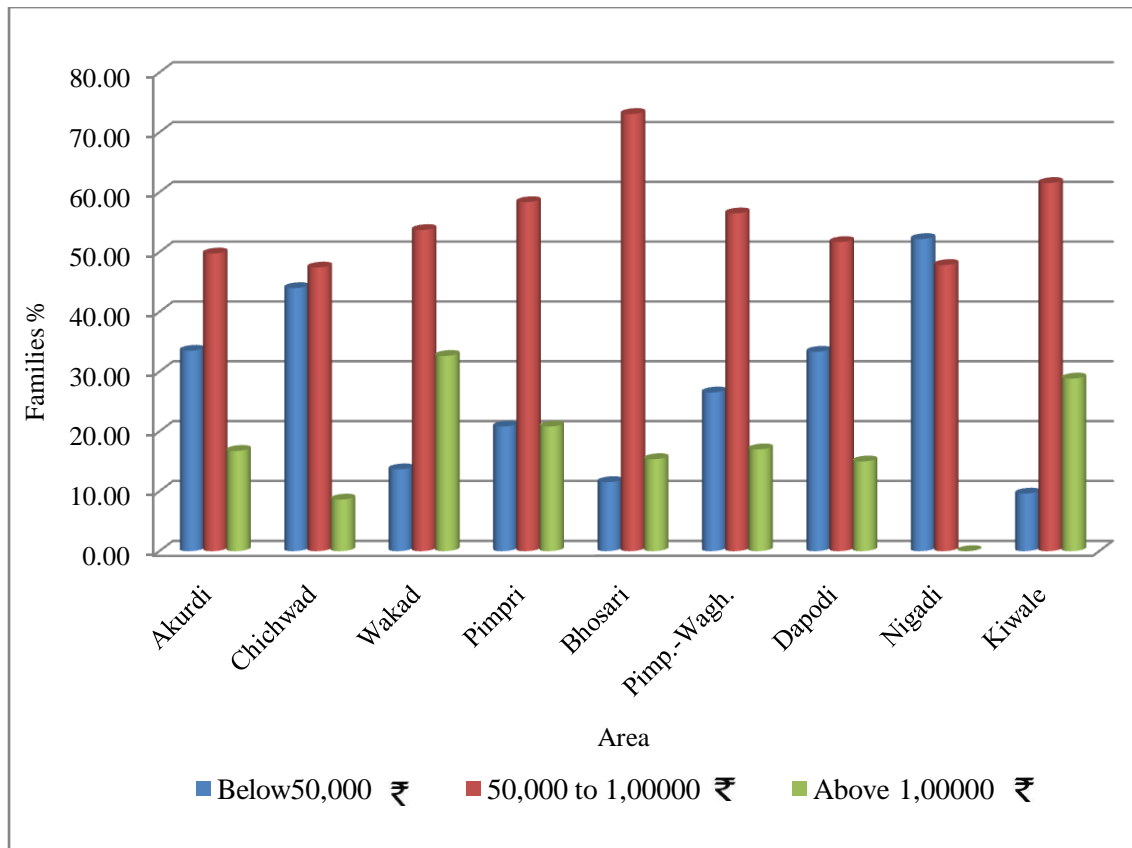
According to table no. 3.1 and fig. no.3.1 out of total families 17.75% families earn income above Rs.1, 00,000 per annum. The 16.75% families in Akurdi, 8.62% families in Chinchwad, 32.64 families in Wakad, 20.83 families in Pimpri, 15.38% families in Bhosari, 17.01% families in Pimpri-Waghere, 15.00% families in Dapodi, 28.85% families in Kiwale earns the annually above Rs.1,00,000. whereas no family in Nigadi slum has their Average Annual income above the Rs.1, 00,000. Most of the people in this income group are service mans and women's like, in Government offices, in Municipal corporation office, in nearest administrative offices, and few have their own self business. Another income group is below 50,000 Rs in this group out of total families 26.22% families earn income per annum below Rs.50,000. The 33.50% families in Akurdi, 13.68% families in Chinchwad, 20.83% families in Pimpri, 11.54% families in Bhosari, 26.53% families in Pimpri-Waghere, 33.33% families in Dapodi, 52.17% families in Nigadi and 9.62% families in Kiwale. Most of the families in this income group perform the activity like, wage labour, collected raw material (*Bhangar*) and last one income group is between Rs.50,000 to Rs.1,00,000 Out of total families 56.03% families earn income between Rs.50,000 to Rs.1,00,000 Per annum. The 49.75% Families in Akurdi, 47.41% Families in Chinchwad, 53.68% Families in Wakad, 58.34% Families in Pimpri, 73.08% Families in Bhosari, 56.46% Families in Pimpri-Waghere, 51.67% Families in Dapodi, 47.83% Families in Nigadi and 61.54% Families in Kiwale. Most of the Families belong to

this income group perform the activity like, Rickshaw driver, Industrial worker and work in Marketing. The all data shows 56.03% families in Pimpri Chinchwad slum areas are earn Rs.50, 000 to Rs.1, 00,000 per annum.

**Table No. 3.1:** Average Annual income of slum families in PCUA.

Region wise Classification of Average Annual income		Below Rs. 50,000	Rs. 50,000 to Rs.1,00,000	Above Rs. 1,00,000	Total
Akurdi	No.	66	98	33	197
	%	33.5	49.75	16.75	100
Chichwad	No.	51	55	10	116
	%	43.97	47.41	8.62	100
Wakad	No.	13	51	31	95
	%	13.68	53.68	32.64	100
Pimpri	No.	25	70	25	120
	%	20.83	58.34	20.83	100
Bhosari	No.	15	95	20	130
	%	11.54	73.08	15.38	100
Pimpri- Waghere	No.	78	166	50	294
	%	26.53	56.46	17.01	100
Dapodi	No.	20	31	9	60
	%	33.33	51.67	15	100
Nigadi	No.	12	11	0	23
	%	52.17	47.83	0	100
Kiwale	No.	5	32	15	52
	%	9.62	61.54	28.85	100
Total	No.	285	609	193	1087
	%	26.22	56.03	17.75	100

*Source: Own Sample Surveyed.*



**Figure No. 3.1:** Average annual income of slum families in PCUA

## 2.2: Home appliances of Slum Population:

Radio and Television are the potent media to spread awareness about the incidence, spread and prevention of diseases and also the status of the environment. It is also effective in bringing about life style changes in the society. (Sufaira C., 2013). Home appliances in society or slum area indicate the living condition. Table no.3.2 and figure no.3.2 reveals that slum dwellers have better access with mobile, television, Refrigerator and vehicle. For the study purpose researcher classified home appliances with their five major home appliances they are cooking gas, mobile, television, Refrigerator and vehicle.

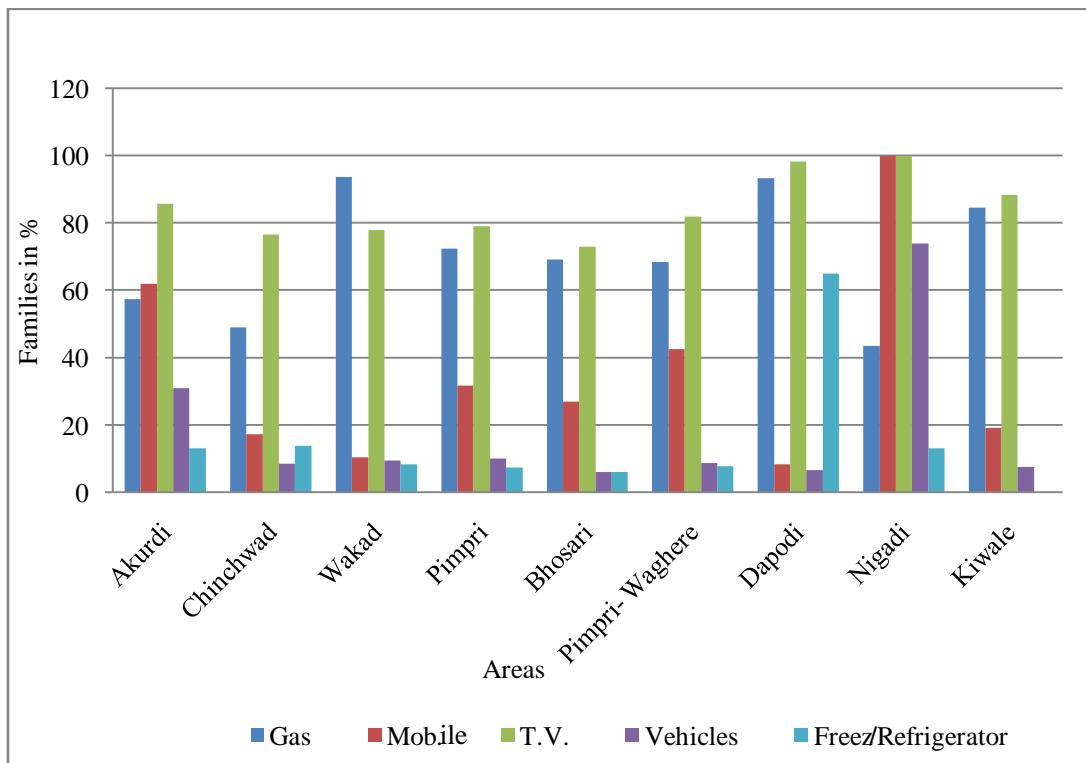
According to the table no.3.2 and figure no.3.2 out of total families 68.70% families are using the cooking gas. The 57.36% families in Akurdi, 49.14% families in Chinchwad, 93.68% families in Wakad, 72.50% families in Pimpri, 69.23% families in Bhosari, 68.23% families in Pimpri Waghere, 93.33% families in Dapodi, 43.48% families in Nigadi and 84.62% families in Kiwale. Most of families using the Bharat gas company and Hindustan petroleum company gas for the cooking in slum area. Another home appliance is mobile. Out of the total families 35.69% families are using the mobile for communication purpose of various ways. The 61.93% families in

Akurdi, 17.24% families in Chinchwad, 10.53% families in Wakad, 31.67% families in Pimpri, 26.92% families in Bhosari, 42.54% families in Pimpri Wagere, 8.33% families in Dapodi, 19.23% families in Kiwale and 100.00% families in Nigadi are using the mobile. Most of the families using the Micro max; Samsung and China made company with Uninor and Docomo sim card. Next home appliance is Television. Out of the families better access with television about 81.97% families are using the television in Pimpri Chinchwad slum area. The 85.79% families in Akurdi, 76.72% families in Chinchwad, 77.89% families in Wakad, 79.17% families in Pimpri, 73.08% families in Bhosari, 81.97% families in Pimpri Waghere, 98.33% families in Dapodi, 88.46% families in Kiwale and 100.00% families in Nigadi are using the television. Most of the population using the Color television with Videocon dish. Out of total population 13.49% families are using the vehicles including the only two wheelers (excluding bicycle) and three wheelers and four wheelers. The 30.96% families in Akurdi, 8.62% families in Chinchwad, 9.47% families in Wakad, 10.00% families in Pimpri, 6.15% families in Bhosari, 8.84% families in Pimpri Waghere, 6.67% families in Dapodi, 73.91% families in Nigadi and 7.69% families in Kiwale. Most of the families using the two wheelers bike of Bajaj and Yamaha Company and few families using the second hand car these are Maruti-800, Esteem and other. Last one home appliance is Refrigerator. Out of the total families 12.14% families are using Refrigerator in Pimpri Chinchwad Slum area. The 13.20% families in Akurdi, 13.79% families in Chinchwad, 8.42% families in Wakad, 7.50% families in Pimpri, 6.15% families in Bhosari, 7.82% families in Pimpri Waghere, 65.00% families in Dapodi, 13.04% families in Nigadi and where as no family persons in Kiwale slums using the Refrigerator. Most of the families are using the Life Good (LG) Company Refrigerator. In summarize most of the slum dwellers are better access with the all home appliances due to it is indicate the living condition are better of slum dwellers in Pimpri Chinchwad slum area.

**Table No. 3.2:** Area wise home appliances of slum population in PCUA.

Area	Total number of families	Gas		Mobile		T.V.		Vehicles		Refrigerator	
		N0.	%	N0.	%	N0.	%	N0.	%	N0.	%
Akurdi	197	113	57.36	122	61.93	169	85.79	61	30.96	26	13.2
Chinchwad	116	57	49.14	20	17.24	89	76.72	10	8.62	16	13.79
Wakad	95	89	93.68	10	10.53	74	77.89	9	9.47	8	8.42
Pimpri	120	87	72.5	38	31.67	95	79.17	12	10	9	7.5
Bhosari	130	90	69.23	35	26.92	95	73.08	8	6.15	8	6.15
Pimpri-Waghare	294	201	68.37	125	42.54	241	81.97	26	8.84	23	7.82
Dapodi	60	56	93.33	5	8.33	59	98.33	4	6.67	39	65
Nigadi	23	10	43.48	23	100	23	100	17	73.91	3	13.04
Kiwale	52	44	84.62	10	19.23	46	88.46	4	7.69	0	0
Total	1087	747	68.7	388	35.69	891	81.97	151	13.89	132	12.14

*Source: Own Sample Surveyed.*



**Figure No. 3.2:** Area wise home appliances of slum population in PCUA.

### **2.3: Occupational status of slum population:**

Occupational structure in society or slum area is indicating the development of living condition, educational status, availability of home appliances and income. In present study considers occupation with classification of different occupation like, Wages labours, industrial workers, non professional workers (including the self business, drivers and marketing) and professional workers (including the government servant, municipal servant, engineers and teacher). This classification in two ways first is sexual classification of occupational distribution of total slum Population and second is area wise occupational distribution of slum population.

#### **2.3.1: Sex wise occupational status of slum population:**

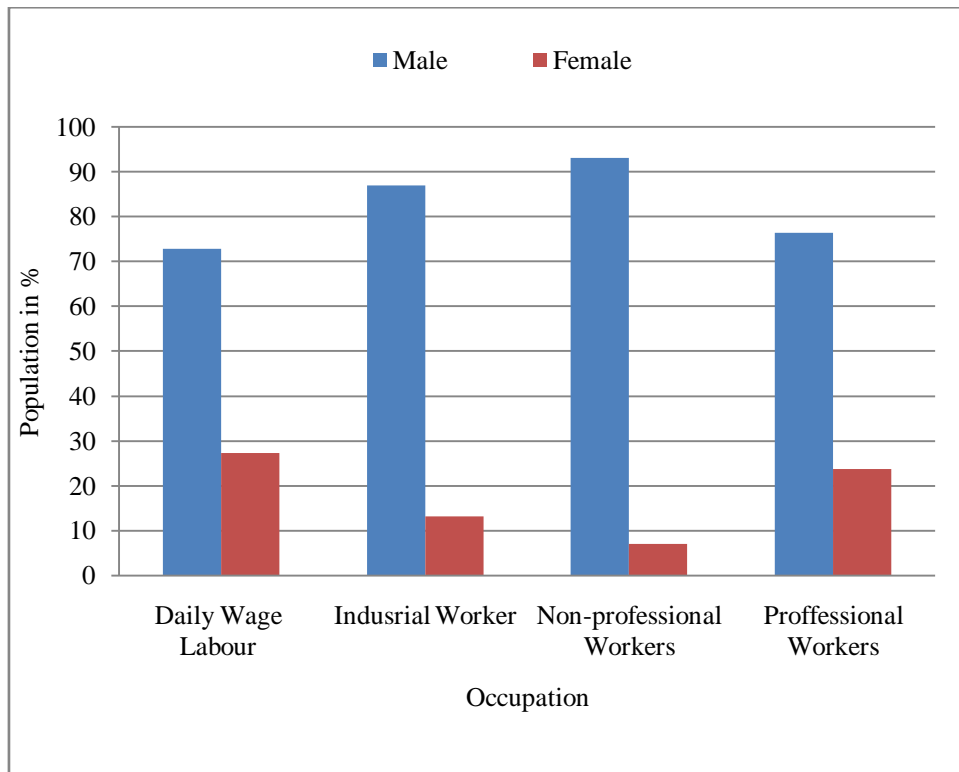
Table no.3.3 and figure no.3.3 shows the sex wise occupational Status of slum population in Pimpri Chinchwad urban area. Out of total populations 80.91% male population and 19.08% female population are engaged in various occupations. 72.81% male populations and 27.19% female populations as working in wage labour and another is 86.93% male population and 13.70% female population as working in industrial work. Another is 92.99% male population and 7.01% female population as working non professional work like, self business and drivers. Last one is 76.32% male population and 23.68% female population as working in professional work like, teacher, in municipal offices and in government offices. Most of slum population is working in various work places but this work over there is totally on temporary basis. The data given for the gender status and occupation was tested through  $\chi^2$  test. The calculated value ie  $\chi^2 = 78.80$  was found greater than critical value. Which mean these two attributes (gender and occupation) is associated with each other.



**Table No. 3.3:** Sex wise occupational status of slum population in PCUA.

Occupation	Male Population		Female Population		Total Population
	No.	%	No.	%	No.
Wage Labour	589	72.81	220	27.19	809
Industrial Worker	326	86.93	49	13.07	375
Non professional Workers	345	92.99	26	7.01	371
Professional Workers	29	76.32	9	23.68	38
Total	1289	80.91	304	19.08	1593

*Source: Own Sample Surveyed.*



**Figure No. 3.3:** Sex wise occupational status of slum population in PCUA.

**2.3.2: Area wise occupational status of slum population:**

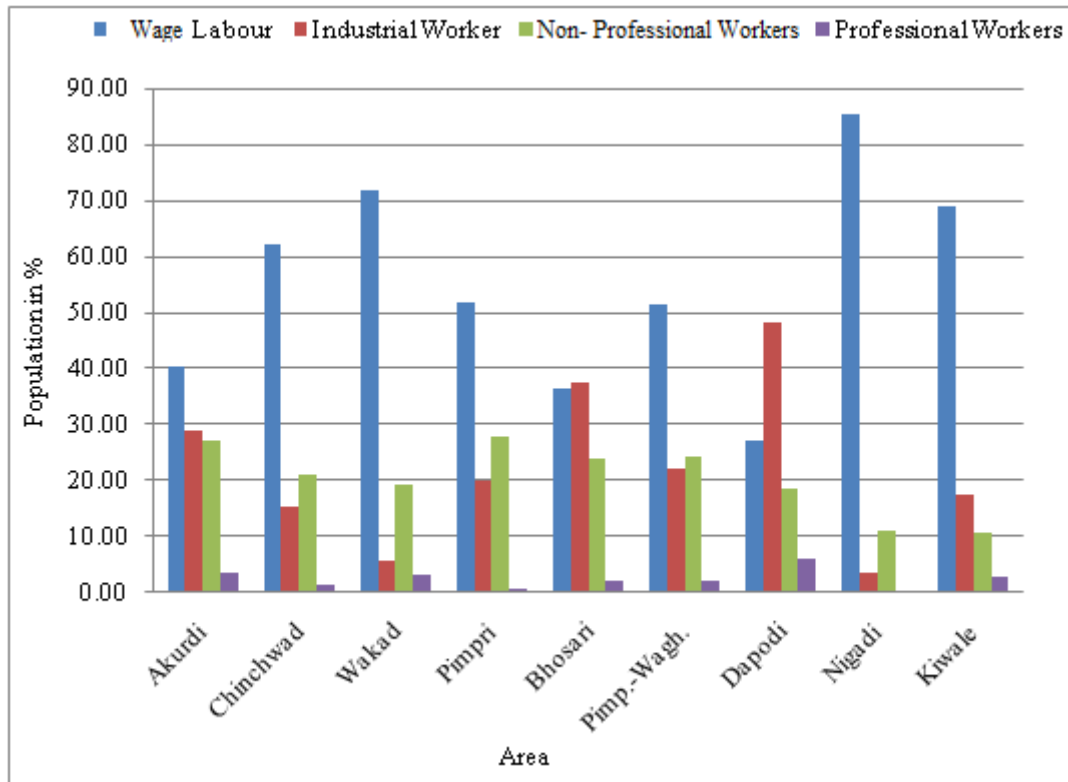
Which is shown the table no.3.4 and figure no.3.4 most of the populations are engaged in Wage labour activity in Pimpri Chinchwad slum area it is 50.78%. The 40.48% population in Akurdi, 62.24% population in Chinchwad, 71.77% population in Wakad, 51.63% populatio in Pimpri, 36.32% population in Bhosari, 51.38% population in Pimpri wagher, 27.16% population in Dapodi, 85.19% population in

Nigadi and 68.92% population in Kiwale. All these populations are working as wage labour in construction line, cleaning, and garbage collection in nearest urban area which is shows lowest income group population. Also these populations are uneducated. Another occupation is industrial worker. Out of the total population 23.54% population are working in industrial works. The 28.91% Population in Akurdi, 15.31% Population in Chinchwad, 5.65% Population in Wakad, 20.11% Population in Pimpri, 37.43% Population in Bhosari, 22.12% Population in Pimpri Waghere, 48.15% Population in Dapodi, 3.70% Population in Nigadi and 17.57% Population in Kiwale. All these populations are working in industry like, helper and marketing. In nearest industry of slum it is Thermax industry (Akurdi), Bajaj Industry (Akurdi), Kinetic engineering (Chinchwad), Tata motors (Pimpri), Quality circle (Bhosari) and Ulka industry (Bhosari). It is temporary base on working. Another occupation is non professional work. Out of the total population 23.29% population are working as non professional work. The 27.21% population in Akurdi, 20.92% population in Chinchwad, 19.35% population in Wakad, 27.72% population in Pimpri, 24.02% population in Bhosari, 24.43% population in Pimpri Waghere, 15.52% population in Dapodi, 11.11% population in Nigadi and 10.81% population in Kiwale. Non professional group work is including marketing, self business, drivers, foot path shop and other private. Another occupational group is professional workers. Out of the total population 2.39% are working as professional workers. The 3.40% population in Akurdi, 1.53% population in Chinchwad, 3.23% population in Wakad, 0.54% population in Pimpri, 2.23% population in Bhosari, 2.07% population in Pimpri Waghere, 6.17% population in Dapodi, 2.70% population in Kiwale working as professional worker. Few people are engaged in professional worker of slum area. Professional group work is including engineer, in municipal offices, in IT Company, in Government offices and teacher. The higher income populations are included in this group due to most educated populations are working in professional work. Whereas no any populations in Nigadi region working as Professional work. The all data indicate out of the total population 50.78% populations are working as Wage labour and only 2.39% populations are working as Professional workers. Most of the slums populations are engaged in Wage labour works compare other occupation in Pimpri Chinchwad urban area.

**Table No. 3.4:** Area wise occupational status of slum population in PCUA.

Area wise occupation status		Wage labour	Industrial worker	Non professional workers	Professional workers	Total population
Akurdi	No.	119	85	80	10	294
	%	40.48	28.91	27.21	3.4	100
Chinchwad	No.	122	30	41	3	196
	%	62.24	15.31	20.92	1.53	100
Wakad	No.	89	7	24	4	124
	%	71.77	5.65	19.35	3.23	100
Pimpri	No.	95	37	51	1	184
	%	51.63	20.11	27.72	0.54	100
Bhosari	No.	65	67	43	4	179
	%	36.32	37.43	24.02	2.23	100
Pimpri-Wagh.	No.	223	96	106	9	434
	%	51.38	22.12	24.43	2.07	100
Dapodi	No.	22	39	15	5	81
	%	27.16	48.15	18.52	6.17	100
Nigadi	No.	23	1	3	0	27
	%	85.19	3.7	11.11	0	100
Kiwale	No.	51	13	8	2	74
	%	68.92	17.57	10.81	2.7	100
Total	No.	809	375	371	38	1593
	%	50.78	23.54	23.29	2.39	100

*Source: Own Sample Surveyed.*



**Figure No. 3.4:** Area wise occupational status of slum population in PCUA.

#### **2.4: Average annual income with educational status of slum population:**

Income and education indicate the status in society or slum and income also play as important role of development of settlement. Educational development is change in life pattern and life style. Average Annual income also reflects the up gradation of population towards the education and literacy. The table no.3.5 shows the income class and level of educated family members. This may help to get the idea of educational level of slum population in Pimpri Chinchwad slum area in different economic classes. This is shown in table no.3.5.

According to table no.3.5 and figure no.3.5 in below Rs.40,000 annual incomes class educationally 30.13% population is illiterate, 17.57% population is getting Primary level education, 41.63% population is getting secondary level education, 6.28% population is getting Junior college level education, 4.39% population is getting graduate and post graduate level education. Second income class is Rs.40,000 to Rs.60,000 annual incomes. In this annual class educationally 30.40% population is illiterate, 15.32% population is getting primary level education, 44.89% population is getting secondary level education, 6.18% population is getting junior college education, and 3.21% population is getting graduate and postgraduate level education. Third income class is Rs.60, 000 to Rs.80, 000 annual incomes. In this

annual class educationally 28.62% population is illiterate, 13.69% population is getting primary level education, 44.63% population is getting secondary level education, 9.39% population is getting junior college level education, and 3.67% population is getting gradate and postgraduate level education. Fourth income class is Rs.80,000 to Rs. 1,00,000 annual incomes. In this annual class educationally 30.13% population is illiterate, 13.77% population is getting primary level education, 42.08% population is getting secondary level education, 8.96% population is getting junior college level education, and 5.06% population is getting gradate and postgraduate level education. Fifth income class is Rs.1, 00,000 to Rs.1, 20,000 annual incomes. In this annual class educationally 27.02% population is illiterate, 13.31% population is getting primary level education, 43.55% population is getting secondary level education, 9.68% population is getting junior college level education, and 6.45% population is getting gradate and postgraduate level education. Sixth income class is Rs.1, 20,000 to Rs.1, 40,000 annual incomes. In this annual class educationally 26.64% population is illiterate, 10.25% population is getting primary level education, 47.95% population is getting secondary level education, 10.25% population is getting junior college level education, and 4.92% population is getting gradate and postgraduate level. Another income class is Rs.1, 40,000 to Rs.1, 60,000 annual incomes. In this annual class educationally 23.18% population is illiterate, 11.92% population is getting primary level education, 44.37% population is getting secondary level education, 13.25% population is getting junior college level education, and 7.28% population is getting gradate and postgraduate level education. Another income class is Rs.1, 60,000 to Rs.1, 80,000 annual incomes. In this annual class educationally 29.09% population is illiterate, 7.27% population is getting primary level education, 43.64% population is secondary level education, 12.73% population is getting junior college level education, and 7.27% population is getting gradate and postgraduate level education. Another income class is Rs.1, 80,000 to Rs.2, 00,000 annual incomes. In this annual class educationally 32.50% population is illiterate, 10.00% population is getting primary level education, 40.00% population is getting secondary level education, 7.50% is getting junior college level education, and 10.00% population is getting gradate and postgraduate level education. Last one income class is above Rs.2, 00,000 annual incomes. In this annual class educationally 25.35% population is illiterate, 12.68% population is getting primary level education, 38.03% population is getting secondary level education, 9.86% population is getting

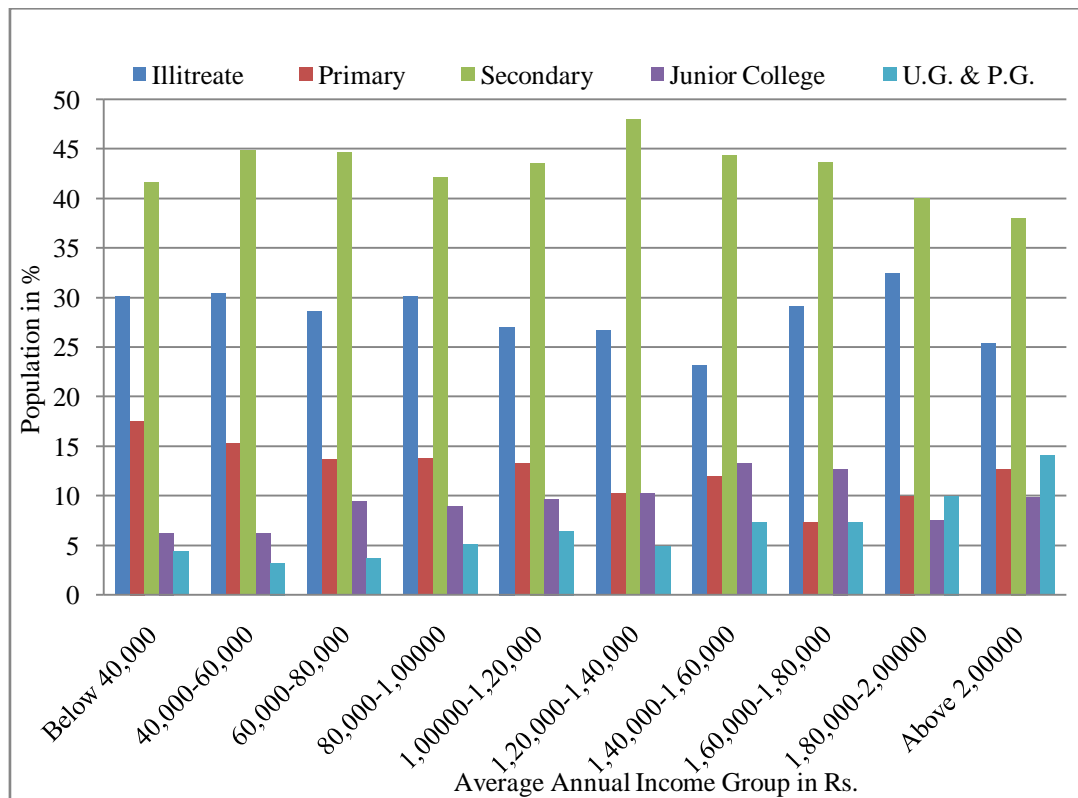
junior college level education, and 14.08% population is graduate and postgraduate level education. The data were related to the average family member Average Annual income wise education. The data indicate out of the total population 29.03% population is illiterate, 43.79% population is taken the secondary level education and 4.61% population is taken the graduate and postgraduate level education in slum population of Pimpri Chinchwad urban area. The data given for the average Annual income and educational status was tested through  $\chi^2$  test the calculated value ie  $\chi^2=61.67$  was found greater than critical value. Which mean these two attributes (annual income and educational status) is associated with each other.

The data indicate the most of the population having average Annual income Rs.60, 000 to Rs. 80,000 had taken the secondary level education. In the entire slum shows 29.03% population is illiterate. The majority of population in all slum has got the education from 1<sup>st</sup> std. to 10<sup>th</sup> std. it is because, this Primary and secondary level education is available in near the settlement of slum which is not much expensive and affordable the slum dwellers. But little population has got the opportunity of higher education which also away from the slum and rather expensive than primary and secondary education. The low income of slum dweller will not support the child to get the costly higher education.

**Table No. 3.5:** Average annual income with educational status of slum population in PCUA

Classification of Average Annual income in Rupees	No. of family member educated up to the level of										Total
	Illiterate		Primary		Secondary		Junior College		U.G. & P.G.		
	No.	%	No.	%	No.	%	No.	%	No.	%	
Below 40,000	144	30.13	84	17.57	199	41.63	30	6.28	21	4.39	478
40,000 to 60,000	256	30.4	129	15.32	378	44.89	52	6.18	27	3.21	842
60,000 to 80,000	320	28.62	153	13.69	499	44.63	105	9.39	41	3.67	1118
80,000 to 1,00000	232	30.13	106	13.77	324	42.08	69	8.96	39	5.06	770
1,00000 to 1,20,000	67	27.02	33	13.31	108	43.55	24	9.68	16	6.45	248
1,20,000 to 1,40,000	65	26.64	25	10.25	117	47.95	25	10.25	12	4.92	244
1,40,000 to 1,60,000	35	23.18	18	11.92	67	44.37	20	13.25	11	7.28	151
1,60,000 to 1,80,000	16	29.09	4	7.27	24	43.64	7	12.73	4	7.27	55
1,80,000 to 2,00000	13	32.5	4	10	16	40	3	7.5	4	10	40
Above 2,00000	18	25.35	9	12.68	27	38.03	7	9.86	10	14.08	71
Total	1166	29.03	565	6.60	1759	43.79	342	8.51	185	4.61	4017

*Source: Own Sample Surveyed.*



**Figure No. 3.5:** Average annual income with educational status of slum population in PCUA

### 3. Social status of slum population in Pimpri Chinchwad urban area:

The social status will be decided by the caste, religion and language used by the slum dwellers. The caste, religion and language of the person many times were being taken from the mother land from which he is migrated. The population in slum has been migrated from these different regions of the country. They may include population from the nearby Tahsils, District, and the other State. They bear the different kinds of social back ground. The assessment of social status of slum population mainly includes the caste status, caste wise education, caste wise occupation and religion. All these elements are basically determined the social status of slum population in Pimpri Chinchwad urban area.

#### 3.1: Area wise Caste status of slum Population:

The data for area wise caste status of slum population was collected through the interviews of families by using the questionnaire prepared for the same. The area wise caste status of slum population has been shown in table no.3.6 and figure no.3.6. Out of the total population 17.57% population of open caste live in slum of Pimpri Chinchwad urban area. Area wise open caste population distribution is following

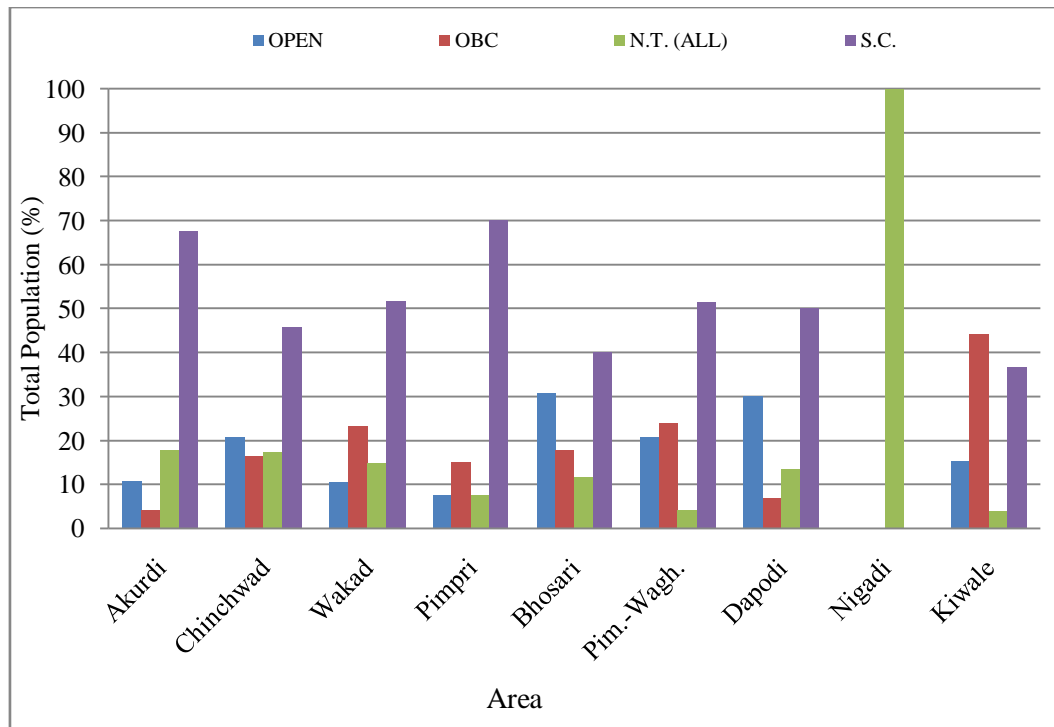


ways; 10.66% population in Akurdi, 20.69% population in Chinchwad, 10.53% population in Wakad, 7.50% population in Pimpri, 30.77% population in Bhosari, 20.75% population in Pimpri Waghere, 30.00% population in Dapodi, 15.38% population in Kiwale region is in open caste and also no anyone people live of open caste in Nigadi region. Another Caste is OBC. Out of the total population 17.20% population of OBC caste live in slum of Pimpri Chinchwad urban area. Area wise OBC caste population distribution is following ways; 4.06% population in Akurdi, 16.38% population in Chinchwad, 23.15% population in Wakad, 15.00% population in Pimpri, 17.69% population in Bhosari, 23.81% population in Pimpri Waghere, 6.67% population in Dapodi, 44.23% population in Kiwale region is in OBC caste and also no anyone people live of OBC caste in Nigadi region. Third caste is NT caste. Out of the total population 12.70% population of NT caste live in slum of Pimpri Chinchwad urban area. Area wise NT caste population distribution is following ways; 17.77% population in Akurdi, 17.24% population in Chinchwad, 14.74% population in Wakad, 7.50% population in Pimpri, 11.54% population in Bhosari, 4.08% population in Pimpri Waghere, 13.33% population in Dapodi, 100.00% population in Nigadi and 3.85% population in Kiwale and last one caste is SC caste. Out of the total population 52.53% population of SC caste live in slum of Pimpri Chinchwad Urban area. 67.51% population in Akurdi, 45.69% population in Chinchwad, 51.58% population in Wakad, 70.00% population in Pimpri, 40.00% population in Bhosari, 51.36% population in Pimpri, 50.00% population in Dapodi, 36.54% population in Kiwale region is in SC caste and also no anyone people live of SC caste in Nigadi region. Above data indicate the most of the population in slum area are SC caste and also in Nigadi region all population is in NT caste.

**Table No. 3.6:** Area wise Caste status of slum Population in PCUA.

Area wise caste status		OPEN	OBC	N.T. (ALL)	S.C.	Total
Akurdi	No.	21	8	35	133	197
	%	10.66	4.06	17.77	67.51	100
Chinchwad	No.	24	19	20	53	116
	%	20.69	16.38	17.24	45.69	100
Wakad	No.	10	22	14	49	95
	%	10.53	23.15	14.74	51.58	100
Pimpri	No.	9	18	9	84	120
	%	7.5	15	7.5	70	100
Bhosari	No.	40	23	15	52	130
	%	30.77	17.69	11.54	40	100
Pimpri Waghare	No.	61	70	12	151	294
	%	20.75	23.81	4.08	51.36	100
Dapodi	No.	18	4	8	30	60
	%	30	6.67	13.33	50	100
Nigadi	No.	0	0	23	0	23
	%	0	0	100	0	100
Kiwale	No.	8	23	2	19	52
	%	15.38	44.23	3.85	36.54	100
Total	No.	191	187	138	571	1087
	%	17.57	17.2	12.7	52.53	100

*Source: Own Sample Surveyed.*



**Figure No. 3.6:** Area wise Caste status of slum Population in PCUA.

### 3.2: Caste wise educational status of slum Population:

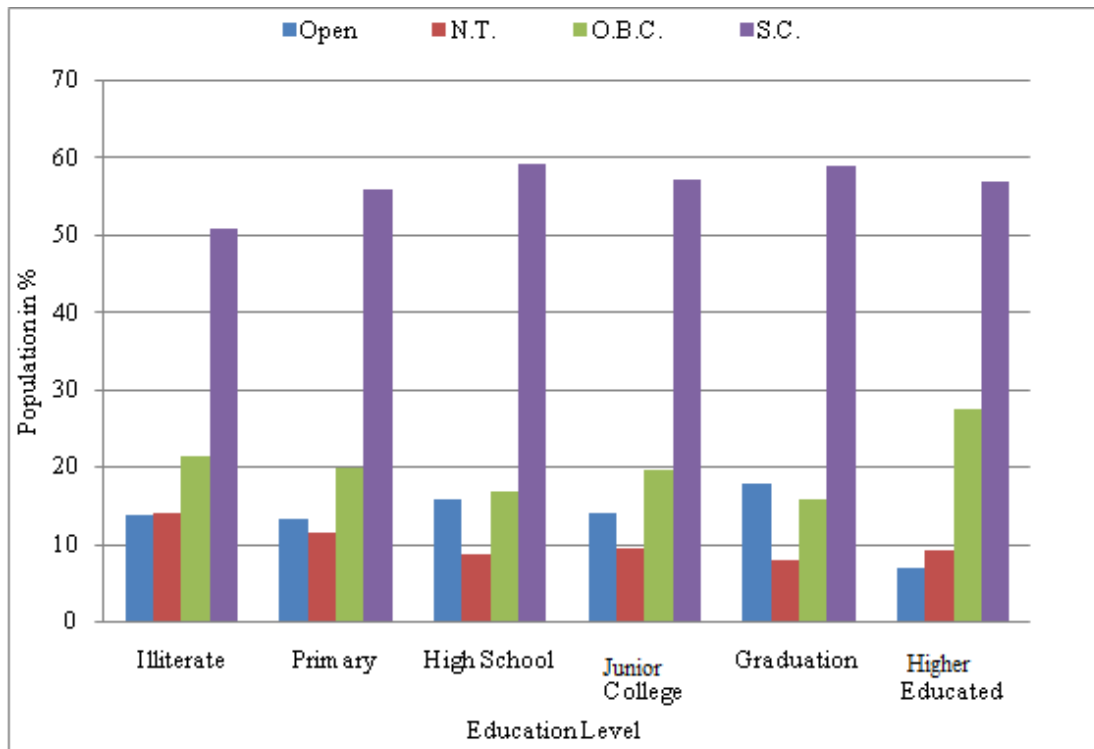
The data for caste wise educational distribution of slum population was collected through the interview with the help of questioners. Table no.3.7 and figure no.3.7 show the caste wise educational distribution of slum population in open caste illiterate population is 13.81%, primary level educated population is 13.10%, high school or secondary level educated population is 15.69%, junior college level educated population is 14.04%, graduate level educated population is 17.73% and the population who have got higher education is 6.82%. Another caste is NT caste. In this cast illiterate population is 14.07%, primary level educated population is 11.33%, high school level educated population is 8.64%, junior college level educated population is 9.36%, graduate level educated population is 7.80% and Higher educated population is 9.09%. Third caste is OBC. In this cast illiterate population is 21.36%, primary level educated population is 19.82%, high school level educated population is 16.66%, junior college level educated population is 19.59%, graduate level educated population is 15.60% and higher educated population is 27.27%. Last one caste is SC caste in this caste educational status is following ways; illiterate population is 50.77%, primary level educated population is 55.75%, high school level educated population is 59.01%, junior college level educated population is 57.02%, graduate level educated population is 58.87% and higher educated population is

56.82%. The data shows 55.96% of the SC caste populations live in slum area due to SC caste population are Higher educated. Most of population in slum area getting the high school level education or secondary level education. The data given for the caste and educational status was tested through  $\chi^2$  test. The calculated value i.e.  $\chi^2 = 47.80$  was found greater than critical value. Which mean these two attributes (caste and education) is associated with each other.

**Table No. 3.7:** Caste wise educational status of slum Population in PCUA.

Educational Level	Type Of Caste								Total
	Open		N.T. (ALL)		O.B.C.		S.C.		
	No.	%	No.	%	No.	%	No.	%	
Illiterate	161	13.81	164	14.07	249	21.36	592	50.77	1166
Primary	74	13.1	64	11.33	112	19.82	315	55.75	565
High school	276	15.69	152	8.64	293	16.66	1038	59.01	1759
Junior college	48	14.04	32	9.36	67	19.59	195	57.02	342
Graduation	25	17.73	11	7.8	22	15.6	83	58.87	141
Higher education	3	6.82	4	9.09	12	27.27	25	56.82	44
Total	587	14.61	427	10.63	755	18.8	2248	55.96	4017

*Source: Own Sample Surveyed.*



**Figure No. 3.7:** Caste wise educational status of slum PCUA.

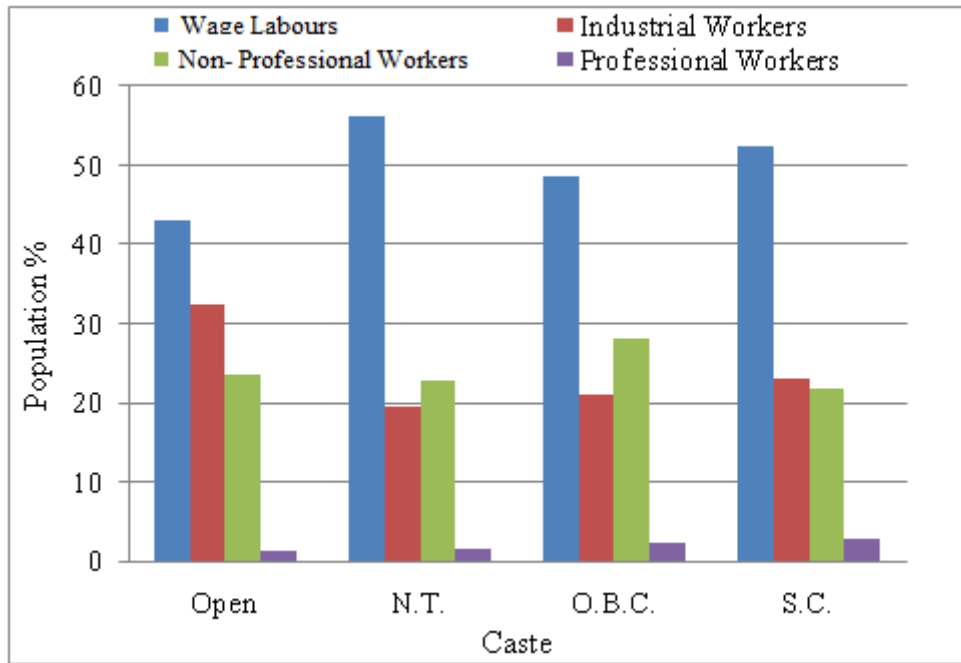
### 3.3: Caste wise occupational status of slum Population:

The resettlement colony employment pattern is the effective factor in the caste. (*Henna Tabussum, 2011*). The data for caste wise occupational distribution of slum was collected through the questioners. The table no.3.8 and figure.3.8 Shows the caste wise occupational status of slum population in Pimpri Chinchwad urban area. In Open caste occupational status of Wage labour is 42.92%, industrial workers are 32.30%, non professional workers are 23.46% and Professional workers are 1.32%. Second one caste is NT caste. In NT Caste occupational status of Wage labour is 56.21%, industrial workers are 19.45%, non professional workers are 22.70% and Professional workers are 1.64%. Another caste is OBC caste. In OBC caste occupational status of Wage labour is 48.63%, industrial workers are 20.89%, non professional workers are 28.00% and Professional workers are 2.40%. Last one caste is SC caste. In SC caste occupational status of Wage labour is 52.35%, industrial workers are 23.03%, non professional workers are 21.79% and Professional workers are 2.83%. The above data shows 50.78% populations are engage in Wage labour work of all caste. The data given for the caste and occupation was tested through  $\chi^2$  test. The calculated value i.e.  $\chi^2 = 20.11$  was found greater than critical value. Which mean these two attributes (caste and occupation) is associated with each other.

**Table No. 3.8:** Caste wise occupational status of slum Population in PCUA.

Occupations	Type of Caste									
	Open		N.T.		O.B.C.		S.C.		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Wage labours	97	42.92	104	56.21	142	48.63	466	52.35	809	50.78
Industrial Workers	73	32.3	36	19.45	61	20.89	205	23.03	375	23.54
Non-professional Workers	53	23.46	42	22.7	82	28.08	194	21.79	371	23.28
Professional workers	3	1.32	3	1.64	7	2.4	25	2.83	38	23.85
Total	226	100	185	100	292	100	890	100	1593	100

*Source: Own Sample Surveyed.*



**Figure No. 3.8:** Caste wise occupational status of slum Population in PCUA.

### 3.4: Area wise Religion status of slum Population:

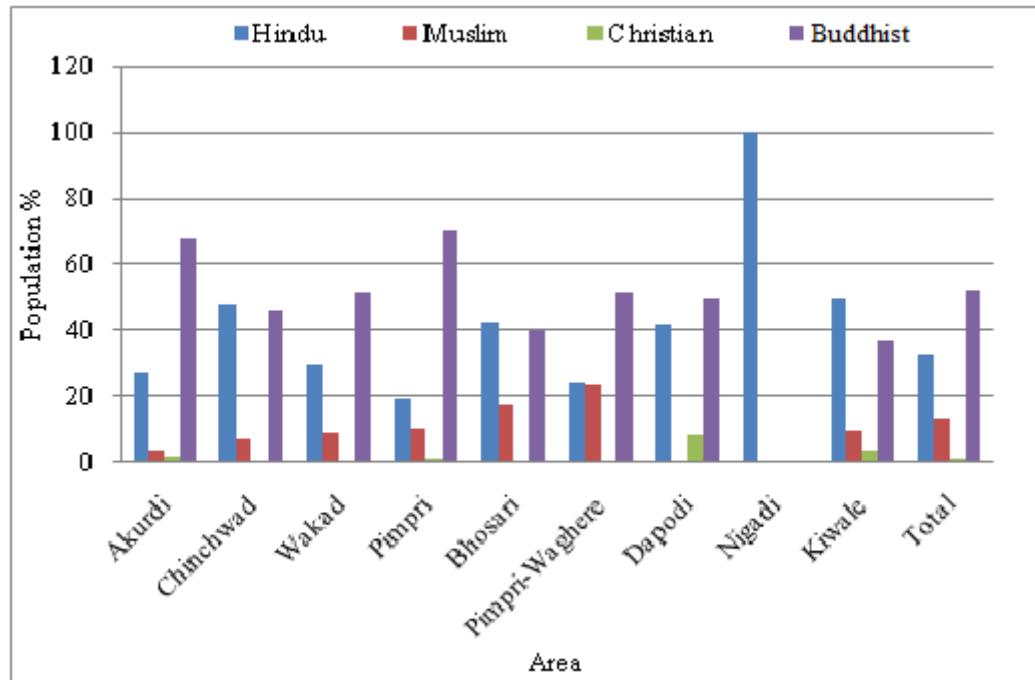
Religion can be used as a basis for identifying cultural regions. A religion is characterized by its own set beliefs, concepts, values, myths and symbols (*Rajiv Ahir, 2010*). An insight into the religious composition of the slum population in Pimpri Chinchwad urban area helps us understand area wise status of religion. The data for area wise religion distribution of slum population was collected through the interview of families by using the questioners prepare for same. The area wise religion status of slum population is show in table no.3.9 and figure no.3.9 out of total population 33.14% population is Hindu religion, 13.24% population is Muslim religion, 1.10% population is Christian religion and 52.52% population is Buddhist religion. All these area wise religion distribution are following ways; in Akurdi region 26.90% Population in Hindu religion, 4.06% Population in Muslim religion, 1.52% Population in Christian religion and 67.52% Population in Buddhist religion. Another region is Chinchwad in this region 47.43% Population in Hindu religion, 6.89% Population in Muslim religion, 45.68% Population in Buddhist religion and no anyone population of Christian religion. Third region is Wakad region. in this region 29.47% Population in Hindu religion, 18.94% Population in Muslim religion, 51.59% Population in Buddhist religion and no anyone population of Christian religion. Fourth region is Pimpri region. In this region 19.16% Population in Hindu religion, 10.00% Population in Muslim religion, 0.84% Population in Christian religion and 70.00% Population in

Buddhist religion. Another region is Bhosari region in this region 42.30% Population in Hindu religion, 17.70% Population in Muslim religion, 40.00% Population in Buddhist religion and no anyone population of Christian religion. Another region is Pimpri Waghere region. In this region 24.48% Population in Hindu religion, 23.80% Population in Muslim religion, 0.34% Population in Christian religion and 51.38% Population in Buddhist religion. Next one is Dapodi region in this region 41.66% population in Hindu religion, 8.34% Population in Christian religion, 50% population in Buddhist religion and no anyone population of Muslim religion. Another region is Nigadi region. In this region all population are include in Hindu religion. No anyone another religion population is live in Nigadi region. Last one is Kiwale region. In this region 50.00% Population in Hindu religion, 9.61% Population in Muslim religion 3.84% Population in Christian religion and 36.55% Population in Buddhist religion. All these data shows most of the population are Buddhist religion. In all slum in Pimpri Chinchwad urban area and only Hindu religion population area live in Nigadi slum region in Pimpri Chinchwad urban area.

**Table No. 3.9:** Area wise Religion status of slum Population in PCUA.

Area	Religions								Total
	Hindu		Muslim		Christian		Buddhist		
	No.	%	No.	%	No.	%	No.	%	
Akurdi	53	26.9	8	4.06	3	1.52	133	67.52	197
Chinchwad	55	47.43	8	6.89	0	0	53	45.68	116
Wakad	28	29.47	18	8.94	0	0	49	51.59	95
Pimpri	23	19.16	12	10	1	0.84	84	70	120
Bhosari	55	42.3	23	17.7	0	0	52	40	130
Pimpri-Waghere	72	24.48	70	23.8	1	0.34	151	51.38	294
Dapodi	25	41.66	0	0	5	8.34	30	50	60
Nigadi	23	100	0	0	0	0	0	0	23
Kiwale	26	50	5	9.61	2	3.84	19	36.55	52
Total	360	33.12	144	13.25	12	1.1	571	52.53	1087

*Source: Own Sample Surveyed.*



**Figure No. 3.9:** Area wise Religion status of slum Population in PCUA.

#### 4. Slum Population as resource in Pimpri Chinchwad Urban area:

Population is the basic elements of the state. One can never think of a state or country without a resident population. Population also plays an important role in modern economic development. It is the most potent resource which can alter the entire face of the country, if utilised prudently. Not only it provides trained and skilled man-power for economic reconstruction but like other natural resources it can be exported to earn regular income and meet financial crisis. But an illiterate and unskilled population full of ethnic and linguistic diversities poses a number of problems whose solutions are always difficult to find out. Although population itself is a resource but plays significant role in the discovery, exploitation and management of different natural resources (*R.C. Tiwari, 2009*) Population as a resources and plays important role for development of region, state, nation or country and for any settlement. In the same way slum provides important human resource for nearest urban area, society, industry, Municipal Corporation and Administrative offices of urban areas. According to social, educational and economical status of the population in slum contributes the development of urban area as well as slum area. Educational status of slum population, Age group wise status of slum population, area wise dependency ratio of slum population and crude labour force participation of slum population all these elements are determine the status of slum population. The



qualities of the population like skills, educational status, economical status and good social and psychological attitude etc will positively affect the development of the slum or the urban area. Due to that population will definitely called as a resource which is importance in the local and regional development.

#### **4.1: Educational status of Slum Population:**

Education is an important variable which can affect demographic as well as settlement behavior concerning with growth of population, participation in labour force, income structure, and housing and building structure etc. (*S.P. Kulkarni, 2012.*). The study of educational status of male and female in the population is important for the study of population characteristics. Education is important role for development of slum population. The area wise educational status of slum population in Pimpri Chinchwad urban area shows in the table no.3.10 and figure no.3.10. out of the total population 29.03% population is illiterate, 14.07%, population is getting the primary level education, 43.79% population is getting the secondary or high school level education, 8.50% population is getting the junior college level education, 3.51% population is graduate and 1.10% population is taken higher education. Most of the populations in Pimpri Chinchwad slum area are getting the secondary level education. The area wise educational status of slum population is following ways; in Akurdi slum region 35.94% population is illiterate, 10.54% population is getting primary level education, 44.95% population is getting high school or secondary level education, 6.88% population is getting the junior college level education, 3.37% population is graduate and 1.32% population is taken higher education. Second one region is Chinchwad slum region. In this region 34.00% population is illiterate, 11.66% population is getting primary level education, 43.18% population is getting high school or secondary level education, 7.94% population is getting the junior college level education, 2.72% population is graduate and 0.50% population is taken higher education. Third one region is Wakad slum region. In this region 28.65% population is illiterate, 17.70% population is getting primary level education, 42.42% population is getting high school or secondary level education, 9.27% population is getting the junior college level education, 1.40% population is graduate and 0.56% population is taken higher education. Fourth one region is Pimpri slum region. In this region 25.42% population is illiterate, 12.18% population is getting primary level education, 51.47% population is getting high school or secondary level education, 6.52% population is getting the junior college level

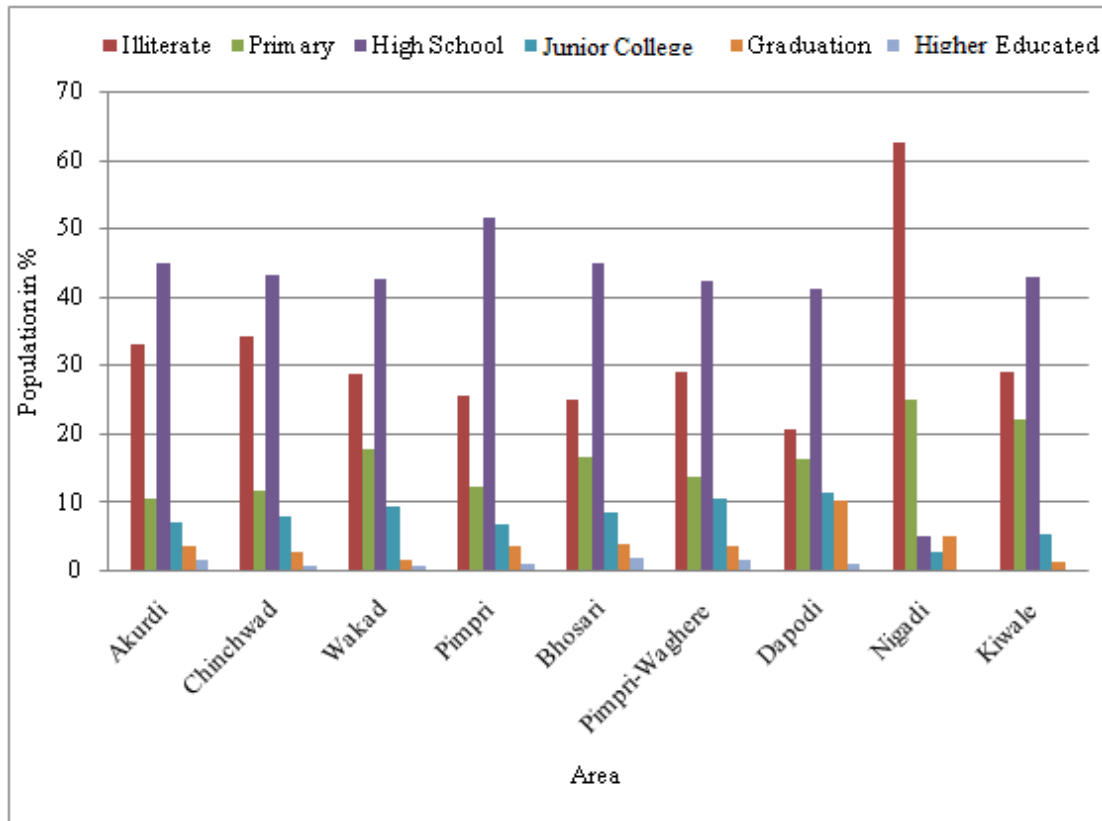
education, 3.57% population is graduate and 0.84% population is taken higher education. Fifth one region is Bhosari slum region. In this region 24.95% population is illiterate, 16.42% population is getting primary level education, 44.91% population is getting high school or secondary level education, 8.32% population is getting the junior college level education, 3.74% population is graduate and 1.66% population is taken higher education. Another region is Pimpri Waghere slum region. in this region 28.83% population is illiterate, 13.68% population is getting primary level education, 42.18% population is getting high school or secondary level education, 10.46% populations are getting the junior college level education, 3.40% populations are graduate and 1.45% population is taken higher education. Next one region is Dapodi slum region. in this region 20.52% population is illiterate, 16.16% population is getting primary level education, 41.05% population is getting high school or secondary level education, 11.35% population is getting the junior college level education, 10.04% population is graduate and 0.88% population is taken higher education. Another region is Nigadi slum region. in this region 62.50% population is illiterate, 25.00% population is getting primary level education, 5.00% population is getting high school or secondary level education, 2.50% population is getting the junior college level education, 5.00% population is graduate and no anyone people is taken higher education in Nigadi slum region and last one region is Kiwale slum region. in this region 28.90% population is illiterate, 21.97% population is getting primary level education, 42.77% population is getting high school or secondary level education, 5.20% population is getting the junior college level education, 1.16% population is graduate in slum of Pimpri Chinchwad urban area and no anyone person is Higher educated in Kiwale slum region. The above data indicate the most of the population in all regions of Pimpri Chinchwad slum area is getting secondary or high school level education and in Nigadi region most of the population is illiterate. The getting higher education to the younger in the slum is difficult due to many odds, hence they are not found to place on higher positions. As these young boys were not much educated and hence not have a good life skill they were place on jobs which requires semi skilled and unskilled helper, workers, Wage labour, driver and self business. The most of the population is illiterate in slum of Pimpri Chinchwad area. They can't have skill for acquiring knowledge regarding any technical as well as mechanical work. It also affects the intellectual ability of people and it changes the social value due to the unacceptance of the people by employers because they are not

useful for any technical work. Therefore they have to go for lower level work. The graduates in these slums are found to be working and acting for awareness the other peoples to be involved in the higher education.

**Table No. 3.10:** Area wise educational status of Slum Population in PCUA.

Area wise educational status of slum population		Illiterate	Primary	High school	Junior college	U.G.	Higher educated	Total
Akurdi	No.	225	72	307	47	23	9	683
	%	32.94	10.54	44.95	6.88	3.37	1.32	100
Chinchwad	No.	137	47	174	32	11	2	403
	%	34	11.66	43.18	7.94	2.72	0.5	100
Wakad	No.	102	63	151	33	5	2	356
	%	28.65	17.7	42.42	9.27	1.4	0.56	100
Pimpri	No.	121	58	245	31	17	4	476
	%	25.42	12.18	51.47	6.52	3.57	0.84	100
Bhosari	No.	120	79	216	40	18	8	481
	%	24.95	16.42	44.91	8.32	3.74	1.66	100
Pimpri-Waghere	No.	339	161	496	123	40	17	1176
	%	28.83	13.68	42.18	10.46	3.4	1.45	100
Dapodi	No.	47	37	94	26	23	2	229
	%	20.52	16.16	41.05	11.35	10.04	0.88	100
Nigadi	No.	25	10	2	1	2	0	40
	%	62.5	25	5	2.5	5	0	100
Kiwale	No.	50	38	74	9	2	0	173
	%	28.9	21.97	42.77	5.2	1.16	0	100
Total	No.	1166	565	1759	342	141	44	4017
	%	29.03	14.07	43.79	8.5	3.51	1.1	100

*Source: Own Sample Surveyed.*



**Figure No. 3.10:** Area wise educational status of Slum Population in PCUA.

#### 4.2: Area wise and Age group wise distribution of Slum Population:

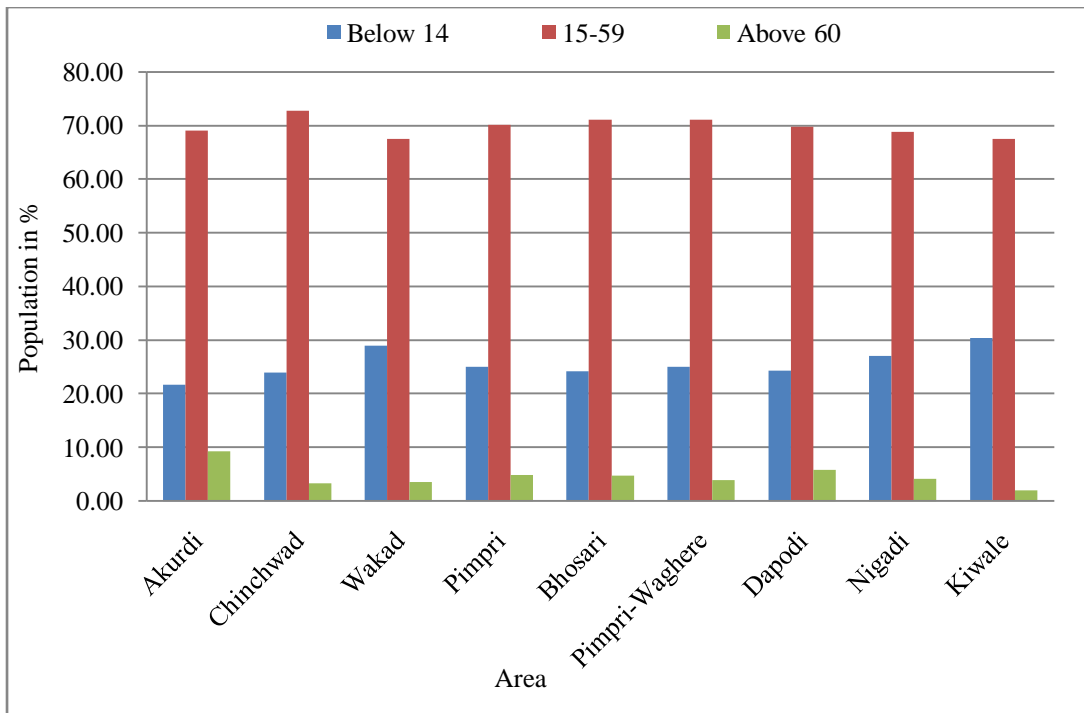
The study of age composition of population is helpful in determining the proportion of the labour force in the total population. It also helps us in understanding about the dependent population (*R.C. Tiwari, 2009*). Age sex structure is one of the most important characteristics of population composition. Almost all population characteristics are very significantly with age. Table no.3.11 and figure no.3.11 shows the age group wise distribution of slum population in Pimpri Chinchwad urban area. Out of the total population in slum of Pimpri Chinchwad area 24.80% population is less than 14 year age, 70.17% population is in between 15 to 59 year age also known as younger population and 5.03% population is above 60 year age. In Pimpri Chinchwad slum area most of the populations are working population and 30% population is dependant population. The area wise and age group wise distribution of slum population in Pimpri Chinchwad area as following ways; in Akurdi slum region 21.70% population is less than 14 year age group, 69.04% population is in between 15 to 59 year age also known as younger population and 9.26% population is above 60 year age. Second region is Chinchwad slum region. In this region 23.95% population is less than 14 year age group, 72.72% population is in between 15 to 59 year age also

known as younger population and 3.33% population is above 60 year age. Third region is Wakad slum region. In this region 28.97% population is less than 14 year age group, 67.44% population is in between 15 to 59 year age also known as younger population and 3.59% population is above 60 year age. Fourth region is Pimpri slum region. In this region 25.05% population is less than 14 year age group, 70.10% population is in between 15 to 59 year age also known as younger population and 4.85% population is above 60 year age. Fifth region is Bhosari slum region. in this region 24.16% population is less than 14 year age group, 71.09% population is in between 15 to 59 year age also known as younger population and 4.75% population is above 60 year age. Another region is Pimpri Waghere slum region. in this region 25.06% population is less than 14 year age group, 71.03% population is in between 15 to 59 year age also known as younger population and 3.91% population is above 60 year age. Another one region is Dapodi slum region. in this slum region 24.37% population is less than 14 year age group, 69.75% population is in between 15 to 59 year age also known as younger population and 5.88% population is above 60 year age. Next one region is Nigadi slum region. In this region 27.08% population is less than 14 year age group, 68.75% population is in between 15 to 59 year age also known as younger population and 4.17% population is above 60 year age and last one region is Kiwale region. in this region 30.41% population is less than 14 year age group, 67.53% population is in between 15 to 59 year age also known as younger population and 2.06% population is above 60 year age. The above data indicate the out of the total population 70.17% population of slum in Pimpri Chinchwad area in between 15 to 59 year age group they working population and 29.83% population is in below 14 year and above 60 year age group they are dependent population. Slum as supply most of working population in nearest urban area in various activity such as, industry, Municipal Corporation, Government offices and administrative center or offices therefore slums in Pimpri Chinchwad area are supply important human resource in nearest urban area and functions.

**Table No. 3.11:** Area wise and Age group wise distribution of Slum Population in PCUA.

Age Group		Below 14 year age	15-59 year age	Above 60 year age	Total
Akurdi	No.	171	544	73	788
	%	21.7	69.04	9.26	100
Chinchwad	No.	108	328	15	451
	%	23.95	72.72	3.33	100
Wakad	No.	113	263	14	390
	%	28.97	67.44	3.59	100
Pimpri	No.	124	347	24	495
	%	25.05	70.1	4.85	100
Bhosari	No.	122	359	24	505
	%	24.16	71.09	4.75	100
Pimpri-Waghare	No.	308	873	48	1229
	%	25.06	71.03	3.91	100
Dapodi	No.	58	166	14	238
	%	24.37	69.75	5.88	100
Nigadi	No.	13	33	2	48
	%	27.08	68.75	4.17	100
Kiwale	No.	59	131	4	194
	%	30.41	67.53	2.06	100
Total	No.	1076	3044	218	4338
	%	24.8	70.17	5.03	100

*Source: Own Sample Surveyed.*



**Figure No. 3.11:** Area wise and Age group wise distribution of Slum PCUA.

#### 4.3: Dependency Ratio of Slum Population:

The dependency ratio is computed by dividing the number of children plus old people by the number of adults and multiplying it by hundred (*Rajiv Ahir, 2010*). This measure indicates the number of dependents per 100 workers and it is computed on the basis of three broad age group up to 14, 15 to 59, and above 60. It reflects the percentage of the population which is unproductive. The dependency ratio is a burden on the resources of the area. (*S. P. Kulkarni, 2012*). Dependency ratio is indicate the working and dependent population. This ratio is useful for the development of houses, standard of living, working status of family as well as supply of important human resources in various activities. The data for area wise dependency ratio of slum in Pimpri Chinchwad area was collected through the interviews of families by using the questionnaires. Table no.3.12 and figure no.3.12 shows the child dependency ratio, aged dependency ratio and dependency ratio of total population including child and old population. The area wise dependency ratio is following ways; in Akurdi region child dependency ratio is 31.43%, aged dependency ratio is 13.42% and dependency of total population is 44.85%. Second region is Chinchwad slum region. In this region child dependency ratio is 32.93%, aged dependency ratio is 4.57% and dependency of total population is 37.50%. Third region is Wakad slum region. In this region child dependency ratio is 42.97%, aged dependency ratio is 5.32% and dependency of total

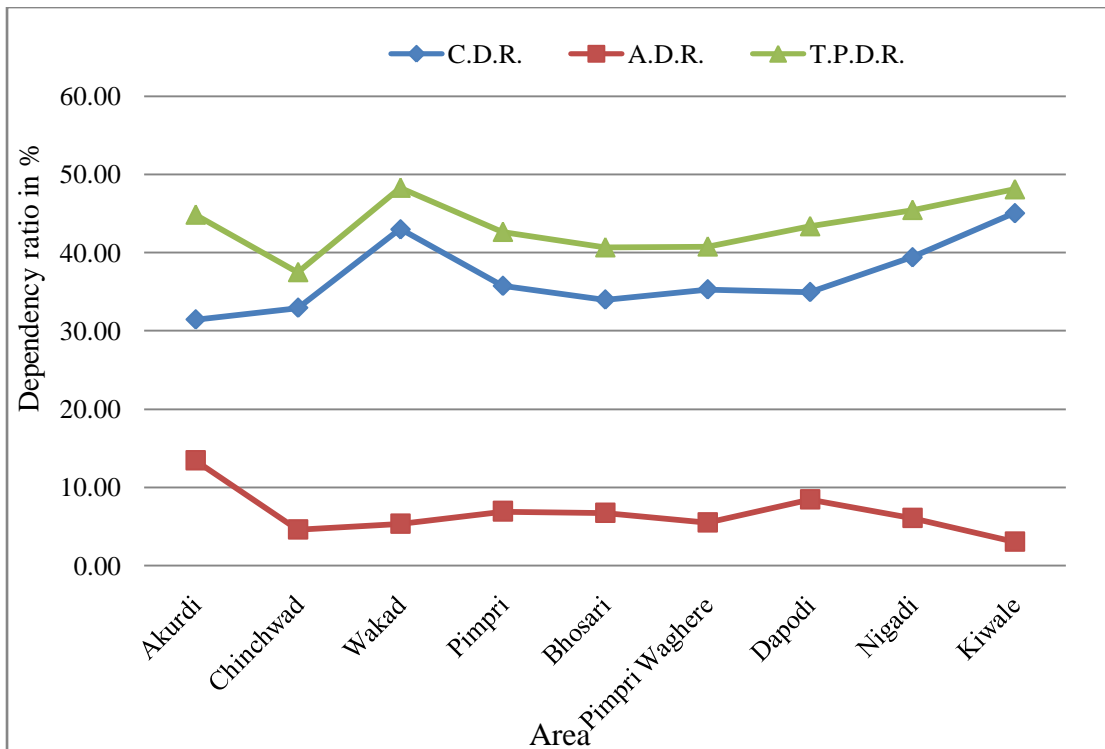
population is 48.29%. Fourth one region is Pimpri slum region. in this region child dependency ratio is 35.73%, aged dependency ratio is 6.92% and dependency of total population is 42.65%. Fifth one region is Bhosari slum region. In this region child dependency ratio is 33.98%, aged dependency ratio is 6.69% and dependency of total population is 40.67%. Another region is Pimpri Waghere slum region. In this region child dependency ratio is 35.28%, aged dependency ratio is 5.50% and dependency of total population is 40.78%. Next one region is Dapodi slum region. In this region child dependency ratio is 34.94%, aged dependency ratio is 8.43% and dependency of total population is 43.37%. Another region is Nigadi slum region. In this region child dependency ratio is 39.39%, aged dependency ratio is 6.06% and dependency of total population is 45.45% and last one region is Kiwale slum region. In this region child dependency ratio is 45.04%, aged dependency ratio is 3.05% and dependency of total population is 48.09%. The data shows the high dependency ratio of wakad and Kiwale region other than slums and low dependency ratio of most of the slums in Pimpri Chinchwad area therefore most of the populations in slum of Pimpri Chinchwad area are working in various activities related to Wage and also child population and old population are engaged in small work such as, cleaning and wetter in hotel. So dependency ratio is reduced hear.

**Table No. 3.12:** Area wise dependency ratio of slum population in PCUA.

Sr. No.	Area	Child dependency ratio in %	Aged dependency ratio in %	Total population dependency ratio in %
1	Akurdi	31.43	13.42	44.85
2	Chinchwad	32.93	4.57	37.50
3	Wakad	42.97	5.32	48.29
4	Pimpri	35.73	6.92	42.65
5	Bhosari	33.98	6.69	40.67
6	Pimpri Waghere	35.28	5.50	40.78
7	Dapodi	34.94	8.43	43.37
8	Nigadi	39.39	6.06	45.45
9	Kiwale	45.04	3.05	48.09

*Source: Own Sample Surveyed.*





**Figure No. 3.12:** Area wise dependency ratio of slum population in PCUA.

**4.4: Labour force participation rate of Slum Population:**

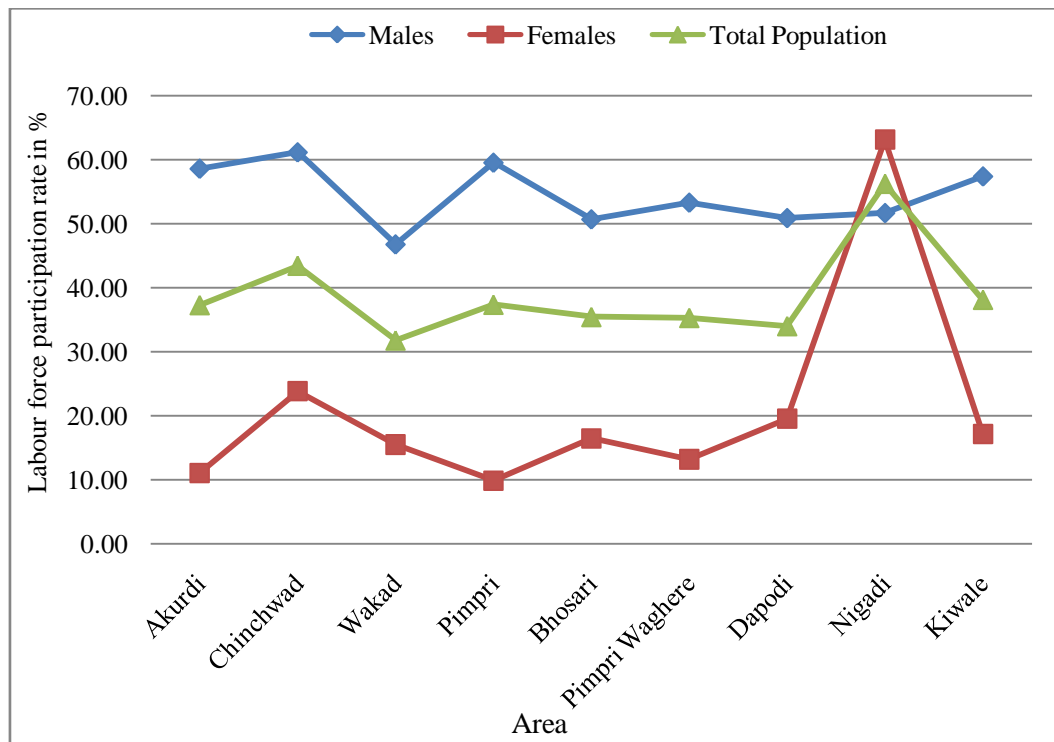
The crude labour force participation rate indicates the size of the labour force in proportion to the size of the total population .The labour force participation rate is computed by taking the total number of persons in the labour force in the numerator and the total population in the denominator and then multiplying the quotient by 100. (Asha A. Bhende and Tara Kanitkar, 2011). Economically active population or the labour force comprised of employment and unemployment person. Labour force participation rate useful for calculate the refined labour force participation rate by relating the total labour force only to the population above the specified minimum age. Crude labour force indicates those people they are working or non working. The data for labour force participation rate was collected through survey and taken the interviews of slum families with the help of questioners. Table no.3.13 and figure no.3.13 shows the labour force participation rate of slum population in Pimpri Chinchwad area. In Akurdi region male labour force participation rate is 58.62%, female labour force participation rate is 11.05% and labour force participation rate of total population is 37.31%. Second one region is Chinchwad slum region. In this region male labour force participation rate is 61.18%, female labour force participation rate is 23.83% and labour force participation rate of total population is 43.46%. Third one region is Wakad slum region. In this slum region male labour

force participation rate is 46.80%, female labour force participation rate is 15.51% and labour force participation rate of total population is 31.79%. Fourth region is Pimpri slum region. In this region male labour force participation rate is 59.56%, female labour force participation rate is 9.87% and labour force participation rate of total population is 37.37%. Fifth region is Bhosari slum region. In this region male labour force participation rate is 50.71%, female labour force participation rate is 16.44% and labour force participation rate of total population is 35.45%. Another region is Pimpri Waghere slum region. In this region male labour force participation rate is 53.32%, female labour force participation rate is 13.22% and labour force participation rate of total population is 35.31%. Another region is Dapodi slum region. In this region male labour force participation rate is 50.91%, female labour force participation rate is 19.53% and labour force participation rate of total population is 34.03%. Next one region is Nigadi slum region. In this region male labour force participation rate is 51.70%, female labour force participation rate is 63.16% and labour force participation rate of total population is 56.25% last one region is Kiwale slum region. In this region male labour force participation rate is 57.42%, female labour force participation rate is 17.20% and labour force participation rate of total population is 38.14%. All above data indicate the male labour force participation rate is higher of all slum in Pimpri Chinchwad area but in Nigadi slum region female labour force participation rate is higher than male labour force participation rate of all slum region in Pimpri Chinchwad urban area. Nigadi slum region labour force participation rate of total population is higher than labour force participation rate of total population in all slums region in Pimpri Chinchwad area. Most of the male populations are working in various activities in nearest urban area.

**Table No. 3.13:** Area wise Labour force participation rate of Slum Population in PCUA.

Sr. No.	Area	Males in %	Females in %	Total Population in %
1	Akurdi	58.62	11.05	37.31
2	Chinchwad	61.18	23.83	43.46
3	Wakad	46.80	15.51	31.79
4	Pimpri	59.56	9.87	37.37
5	Bhosari	50.71	16.44	35.45
6	Pimpri Waghere	53.32	13.22	35.31
7	Dapodi	50.91	19.53	34.03
8	Nigadi	51.70	63.16	56.25
9	Kiwale	57.42	17.20	38.14

*Source: Own Sample Surveyed.*



**Figure No. 3.13:** Area wise Labour force participation rate of Slum PCUA.

In the third topic give the details regarding the economic, social status of slum population and slum population as resources. The chapter focuses on the details of elements of population like annual income, home appliances, sex wise and area wise

occupational status, Average Annual income with educational status, area wise caste status, caste wise educational status, caste wise occupational status, area wise religion status, educational status, age group wise distribution, dependency ratio and labour force participation rate of slum population this will affect the living condition of slum population, educational development of slum population, human resource in and economic development of slum population. All these factors plays important role for socio-economic assessments of slum population in Pimpri Chinchwad urban area.

**PHOTOPLATE: 2. OCCUPATIONS IN SLUMS HUTS OF PIMPRI CHINCHWAD URBAN AREA**



(a) Wage labours from slum huts in Pimpri Chinchwad Urban area



(b) Tea stall (*Tapari*) in Ramabai Nagar slum

**PHOTOPLATE: 2. OCCUPATIONS IN SLUMS HUTS OF PIMPRI  
CHINCHWAD URBAN AREA**



(c) Poppadam domestic occupation in slum



(d) Garbage collection by slum dwellers

**PHOTOPLATE: 3. HEALTH AND EDUCATION FACILITY IN  
PIMPRI CHINCHWAD URBAN AREA**



(a) YCM Hospital facility to all slums in Pimpri Chinchwad area



(b) Secondary & Higher secondary school facility to Vitthal Nagar, Yashwant Nagar, Mahatma Phule Nagar, Gawali Nagar and Neharu Nagar slums in Pimpri Region

## Chapter IV

# DETERIORATION OF URBAN SLUM ENVIRONMENT AND ASSOCIATED PROBLEMS IN SLUMS OF PIMPRI CHINCHWAD URBAN AREA.

### 1. Introduction

### 2. Region wise and Slum wise Status of Water supply, Sanitation and Associated Health Problems in Pimpri Chinchwad Urban Area

#### 2.1. Akurdi Region

##### 2.1.1. Jay Malhar Nagar Slum

2.1.1.1. Tin Bin Causing Solid Waste Pollution

2.1.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.1.1.3. Toilet Seats Causing solid waste & water pollution:

2.1.1.4. Dirty water polluted stream affecting slums insanitation

2.1.1.5. Water borne disease reported in 2012

##### 2.1.2. Nagesh Nagar Slum

2.1.2. 1.Tin Bin Causing Solid Waste Pollution

2.1.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.1.2.3. Toilet Seats Causing solid waste & water pollution

2.1.2.4. Water borne disease reported in 2012

##### 2.1.3. Ajanta Nagar Slum

2.1.3. 1.Tin Bin Causing Solid Waste Pollution

2.1.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.1.3.3. Toilet Seats Causing solid waste & water pollution

2.1.3.4. Water borne disease reported in 2012



## 2.2. Chinchwad Region

### 2.2.1. Anand Nagar Slum

2.2.1.1. Tin Bin Causing Solid Waste Pollution

2.2.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.2.1.3. Toilet Seats Causing solid waste & water pollution

2.2.1.4. Water borne disease reported in 2012

### 2.2.2. Saibaba Nagar Slum

2.2.2. 1.Tin Bin Causing Solid Waste Pollution

2.2.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.2.2.3. Toilet Seats Causing solid waste & water pollution

2.2.2.4. Water borne disease reported in 2012

### 2.2.3. Udyog Nagar Slum

2.2.3. 1.Tin Bin Causing Solid Waste Pollution

2.2.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.2.3.3. Toilet Seats Causing solid waste & water pollution

2.2.3.4. Dirty water polluted stream affecting slums  
insanitation

2.2.3.5. Water borne disease reported in 2012

### 2.2.4. Santosh Nagar Slum

2.2.4. 1.Tin Bin Causing Solid Waste Pollution

2.2.4.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.2.4.3. Toilet Seats Causing solid waste & water pollution

2.2.4.4. Dirty water polluted stream affecting slums  
insanitation

## 2.3. Wakad Region

### 2.3.1. Kalakhadak Slum

2.3.1. 1.Tin Bin Causing Solid Waste Pollution

2.3.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.3.1.3. Toilet Seats Causing solid waste & water pollution

2.3.1.4. Water borne disease reported in 2012

2.3.2. Tapkir Nagar Slum

2.3.2. 1. Tin Bin Causing Solid Waste Pollution

2.3.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.3.2.3. Toilet Seats Causing solid waste & water pollution

2.3.2.4. Water borne disease reported in 2012

2.3.3. Annabhau Sathe Nagar Slum

2.3.3. 1. Tin Bin Causing Solid Waste Pollution

2.3.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.3.3.3. Toilet Seats Causing solid waste & water pollution

2.3.3.4. Water borne disease reported in 2012

2.4. Pimpri Region

2.4.1. Ganesh Nagar Slum

2.4.1. 1. Tin Bin Causing Solid Waste Pollution

2.4.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.4.1.3. Toilet Seats Causing solid waste & water pollution

2.4.1.4. Dirty water polluted stream affecting slums  
insanitation

2.4.1.5. Water borne disease reported in 2012

2.4.2. Ramabai Nagar Slum

2.4.2. 1. Tin Bin Causing Solid Waste Pollution

2.4.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.4.2.3. Toilet Seats Causing solid waste & water pollution

2.4.2.4. Dirty water polluted stream affecting slums  
insanitation

2.4.2.5. Water borne disease reported in 2012

2.4.3. Link Road Slum

2.4.3. 1. Tin Bin Causing Solid Waste Pollution

2.4.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.4.3.3. Toilet Seats Causing solid waste & water pollution

2.4.3.4. Dirty water polluted stream affecting slums  
insanitation

2.4.3.5. Water borne disease reported in 2012

## 2.5. Bhosari Region

### 2.5.1. Sanjay Nagar Wakhar Slum

2.5.1.1. Tin Bin Causing Solid Waste Pollution

2.5.1.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.5.1.3. Toilet Seats Causing solid waste & water pollution

2.5.1.4. Water borne disease reported in 2012

### 2.5.2. Gawali Nagar Slum

2.5.2.1. Tin Bin Causing Solid Waste Pollution

2.5.2.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.5.2.3. Toilet Seats Causing solid waste & water pollution

2.5.2.4. Dirty water polluted stream affecting slums  
insanitation

2.5.2.5. Water borne disease reported in 2012

### 2.5.3. Hirabai Landage Chawl Slum

2.5.3.1. Tin Bin Causing Solid Waste Pollution

2.5.3.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.5.3.3. Toilet Seats Causing solid waste & water pollution

2.5.3.4. Water borne disease reported in 2012

### 2.5.4. Khandewasti Slum:

2.5.4.1. Tin Bin Causing Solid Waste Pollution

2.5.4.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.5.4.3. Toilet Seats Causing solid waste & water pollution

2.5.4.4. Water borne disease reported in 2012

## 2.6. Pimpri Waghere Region

### 2.6.1. Vitthal Nagar Slum

2.6.1.1. Tin Bin Causing Solid Waste Pollution

2.6.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.6.1.3. Toilet Seats Causing solid waste & water pollution

2.6.1.4. Dirty water polluted stream affecting slums  
insanitation

2.6.1.5. Water borne disease reported in 2012

### 2.6.2. Yashwant Nagar Slum

2.6.2.1. Tin Bin Causing Solid Waste Pollution

2.6.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.6.2.3. Toilet Seats Causing solid waste & water pollution

2.6.2.4. Water borne disease reported in 2012

### 2.6.3. Star Rubber Morewadi Slum

2.6.3.1. Tin Bin Causing Solid Waste Pollution

2.6.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.6.3.3. Toilet Seats Causing solid waste & water pollution

2.6.3.4. Dirty water polluted stream affecting slums  
insanitation

2.6.3.5. Water borne disease reported in 2012

### 2.6.4. Annasaheb Magar Nagar Slum

2.6.4.1. Tin Bin Causing Solid Waste Pollution

2.6.4.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.6.4.3. Toilet Seats Causing solid waste & water pollution

2.6.4.4. Water borne disease reported in 2012

### 2.6.5. Nashik Phata Slum

2.6.5.1. Tin Bin Causing Solid Waste Pollution

2.6.5.2. Drinking water taps- surrounding wet marshy places to cause water pollution

2.6.5.3. Toilet Seats Causing solid waste & water pollution

2.6.5.4. Dirty water polluted stream affecting slums  
insanitation

2.6.5.5. Water borne disease reported in 2012

2.6.6. Ratilal Bhagwandas Slum

2.6.6.1. Tin Bin Causing Solid Waste Pollution

2.6.6.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.6.6.3. Toilet Seats Causing solid waste & water pollution

2.6.6.4. Water borne disease reported in 2012

2.7. Dapodi Region

2.7.1. Limbore Chawl Slum

2.7.1.1. Tin Bin Causing Solid Waste Pollution

2.7.1.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.7.1.3. Toilet Seats Causing solid waste & water pollution

2.7.1.4. Water borne disease reported in 2012

2.7.2. Anandwan Slum

2.7.2.1. Tin Bin Causing Solid Waste Pollution

2.7.2.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.7.2.3. Toilet Seats Causing solid waste & water pollution

2.7.2.4. Water borne disease reported in 2012

2.7.3. Omkar Nagar Slum

2.7.3.1. Tin Bin Causing Solid Waste Pollution

2.7.3.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.7.3.3. Toilet Seats Causing solid waste & water pollution

2.7.3.4. Water borne disease reported in 2012

2.8. Nigadi Region

2.8.1. Sharad Nagar Slum

2.8.1.1. Tin Bin Causing Solid Waste Pollution

2.8.1.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.8.1.3. Toilet Seats Causing solid waste & water pollution

2.8.1.4. Water borne disease reported in 2012

2.9. Kiwale Region

2.9.1. M. B. Camp Slum

2.9.1.1. Tin Bin Causing Solid Waste Pollution

2.9.1.2. Drinking water taps- surrounding wet marshy places to  
cause water pollution

2.9.1.3. Toilet Seats Causing solid waste & water pollution

2.9.1.4. Water borne disease reported in 2012.

## **DETERIORATION OF URBAN SLUM ENVIRONMENT AND ASSOCIATED PROBLEMS IN SLUMS OF PIMPRI CHINCHWAD URBAN AREA.**

### **1. Introduction:**

There are many problems associated with urban growth of Indian cities. Slums have come to form an integral part of the phenomena of urbanization in India. About 640 cities and towns in India, 26 states and union territories have reported the slum population, out of that the Andhra Pradesh has largest number of cities it is 77, Uttar Pradesh 69 cities, Tamil Nadu 63 Cities and Maharashtra there are 61 cities with slum population (Census of India 2001).

The Pimpri Chinchwad Municipal Corporation is one of prosperously growing urban area having near about 71 slum Pockets which Contribute 12.85% population out of total population of the city. in Pimpri Chinchwad Municipal Corporation (Census of India 2001).

This Topic examines effects of polluted water and insanitation on the human health in slum areas. There are many problems in slum of Pimpri Chinchwad urban area such as, compactness, air pollution, land pollution, lack of latrine facilities, lack of medical facilities, lack of educational facilities and so on. The water pipelines which passing and crossing bellow the drainage channels in the slum areas causes the water pollution. This may results to pollute the drinking water in pipelines many times the public water taps are very near to garbage collection locations and drainage system (gutter, cannel) this nearness causes the contamination of water. Many diseases are water born diseases. This causes due to polluted or contaminated water. (*Rajesh T. Birajdar & Dr. Arun D. Andhale, 2014*).

The Polluted water, insanitation and its effect on human health of slum population in Pimpri Chinchwad urban areas studied to get some results.

### **2. Region wise and Slum wise Status of Water supply, Sanitation and Associated Health Problems in Pimpri Chinchwad Urban Area:**

The Compact slum Structures in Pimpri Chinchwad Slum regions causes most of the environmental problems and also lead to deteriorate the urban environment and it also affects the effects on human health of slum dwellers.

To get the clear understanding of environmental problems of every selected slum zone and slum huts. The every slum and their status of water supply, sanitation has been shown with separate Google image of respective slum pocket. The Region wise and slum wise status of water supply, sanitation, and associated health problems in slums were discussed with the help of the data collected through various sources. The region wise details of these environmental problems were discussed with the help of Table, Graphs and various Google images of the region. (*Rajesh T. Birajdar & Dr. Arun D. Andhale, 2014*).

### **2.1. Akurdi Region:**

There are three slum pockets in Akurdi region it is Jay Malhar Nagar, Nagesh Nagar and Ajanta Nagar slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

#### **2.1.1. Jay Malhar Nagar Slum:**

The Jay Malhar Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

##### **2.1.1. 1.Tin Bin Causing Solid Waste Pollution:**

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the urban area as well as in the slum areas. In Jay Malhar Nagar slum area there are about three Tin Bin kept at different sites which has been already shown in the Figure no. 4.2. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin was pointed at the time of field work. The details of same were presented in Table no: 4.1and Figure no: 4.2.This shows that the total area under solid waste pollution is 50Sq.mts and the adjacent slum huts to it are 31 which include the 103 population.



**Table No.4.1:** Status of Tin Bin Causing Solid Waste Pollution in Jay Malhar Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	18	06	22	05
2	12	10	34	04
3	20	15	47	05
Total	50	31	103	14

*Source: Own Sample Surveyed.*

**2.1.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps & location of water taps is a very important aspect for sanitation in Jay Malhar Nagar slum. There are about four drinking water taps. These are situated at different sites which are shown in Figure no. 4.2. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table No: 4.2 and Figure no: 4.2. This shows 52sq.mts of marshy & Water pollution area which is adjacent to 117 slum huts, which include the 237 population.

**Table No.4.2:** Status of Drinking water taps- surrounding wet marshy places to cause Water pollution in Jay Malhar Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts.)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	22	62	04
2	16	34	58	03
3	10	32	49	04
4	12	29	68	09
Total	52	117	237	20

*Source: Own Sample Surveyed.*

**2.1.1.3. Toilet Seats Causing solid waste & water pollution:**

Daily cleanliness, well maintenance & regular water supply of toilet seats is a important aspect from the point of view of sanitation in the urban area as well as in the slum areas in Jay Malhar Nagar slum. There are about two toilet seats kept at different locations. This toilet seats create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no.4.2 and Table No.4.3. This shows that the total area under solid, water and Land pollution is about 20Sq.mts. & the adjacent huts to this area are 18 which include the 54 population.

**Table No.4.3:** Status of Toilet Seats Causing solid waste & water pollution in Jay Malhar Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	08	06	18	03
2	12	12	36	04
Total	20	18	54	07

*Source: Own Sample Surveyed.*

**2.1.1.4. Dirty water polluted stream affecting slums insanitation:**

The Jay Malhar Nagar slum zone has 280rmts of internal gutters, flowing openly very close to slum huts, where as it has also a natural stream at the eastern side of slum zone having a length of 169rmts This stream has been altered with the cement concrete layer to control the monsoonal flow and to protect the slum huts from it. Even the natural status of the stream is non perennial it has becomes a perennial due to continuous supply of gutter water from the adjacent slum zone. The nearness of dirty gutter and polluted stream causes the insanitation to almost all the slum huts, which area close to the gutter of the streams, the water delivered in the gutter will go to stream and automatically pollute the main river Pawana it is shown Figure no.4.2 and Table no: 4.4.

**Table No.4.4:** Status of Dirty water polluted stream affecting slums insanitation in Jay Malhar Nagar slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
280	169

*Source: Own Sample Surveyed.*

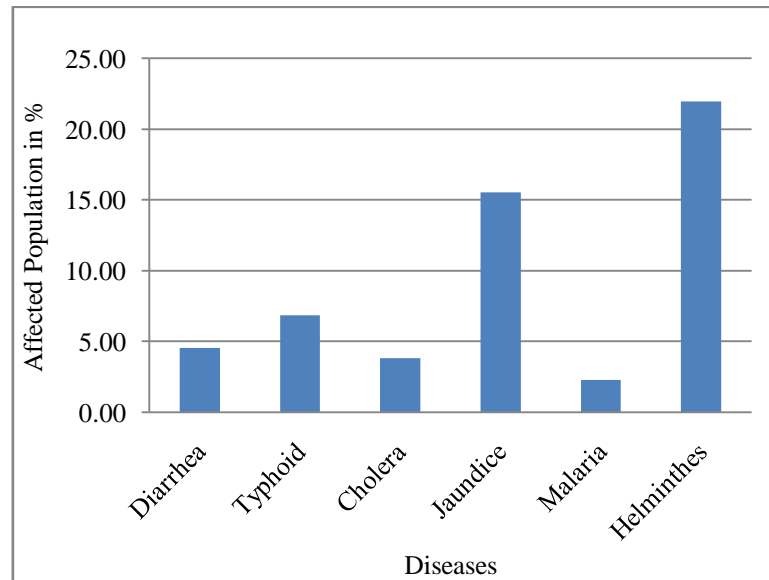
**2.1.1.5. Water borne disease reported in 2012:**

There are many problems in Jay Malhar Nagar slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with Table and graphs to study area among water borne diseases are affected on children under the age group Below 5 as well as the above 60 age group and most of population in Jay Malhar Nagar slum Affected or Illness due to the Helminths and Jaundice Diseases it is respectively 21.97% and 15.53% because in this slum dirty polluted water stream are flowing, lack of sanitation facilities and lack of healthy services or facilities. Also these water borne diseases are dangerous for human health of living slum population in Jay Malhar Nagar slum. The details of same were presented in Table no.4.5 and Figure no. 4.1. This shows that the water borne diseases with age group wise total affected population. Out of the total population 54.93% population are affected due to water borne diseases in Jay Malhar Nagar slum.

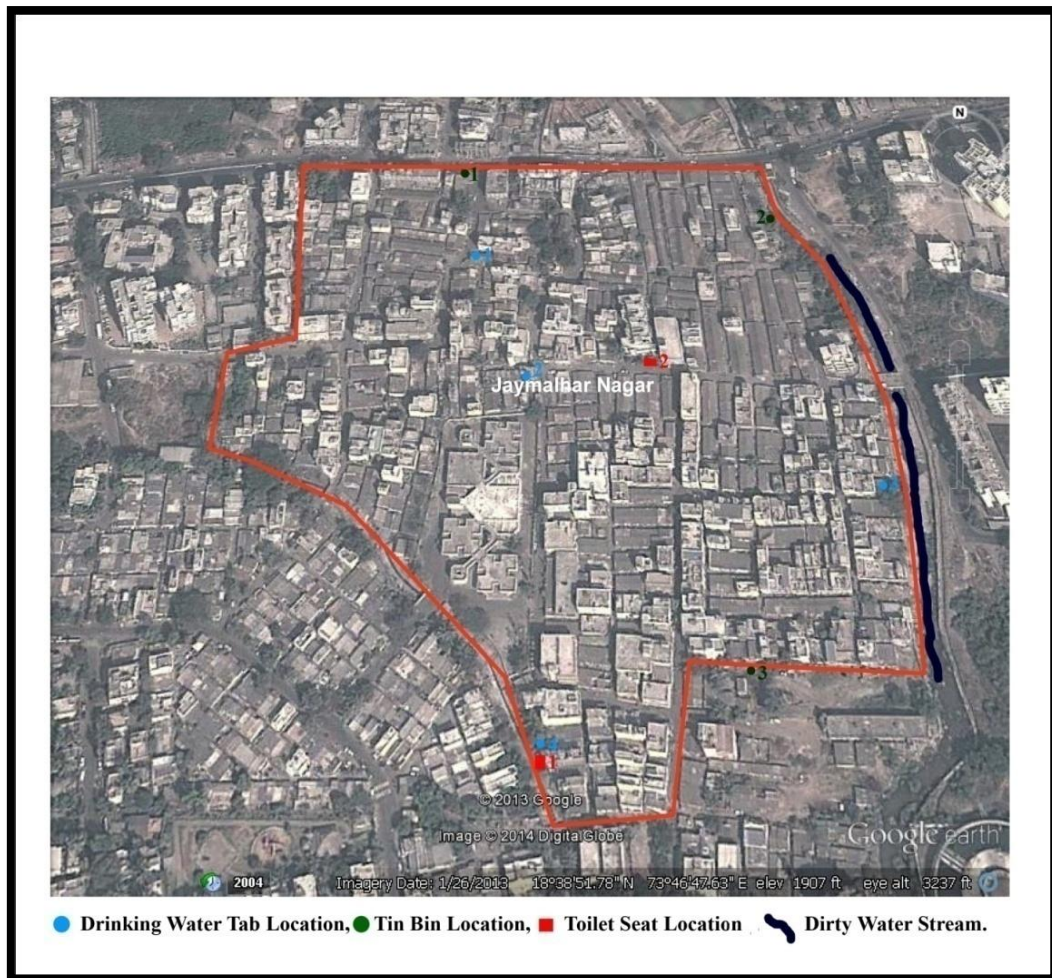
**Table No.4.5:** Status of Water borne diseases in Jay Malhar Nagar slum.

Diseases	Age Group Wise Classification								T.A.P.	T.A.P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	03	1.14	02	0.76	03	1.14	04	1.52	12	4.55
Typhoid	04	1.52	06	2.27	06	2.27	02	0.76	18	6.82
Cholera	03	1.14	02	0.76	04	1.52	01	0.38	10	3.79
Jaundice	08	3.03	08	3.03	10	3.79	15	5.68	41	15.53
Malaria	00	0.0	02	0.76	02	0.76	02	0.76	06	2.27
Helminths	26	9.85	12	4.55	09	3.41	11	4.17	58	21.97
Total	44	16.67	32	12.12	34	12.88	35	13.26	145	54.93
Total Population is 264										

*Source: Own Sample Surveyed.*



**Figure No.4.1:** Affected Population of Water borne diseases in Jay Malhar Nagar Slum.



**Figure No.4.2:** Google image of Jay Malhar Nagar Slum in Akurdi Region.

### 2.1.2. Nagesh Nagar Slum:

The Nagesh Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### 2.1.2. 1. Tin Bin Causing Solid Waste Pollution:

In Nagesh Nagar slum area, There are about two tin bin kept at different sites. Which has been already showing in the Figure no.4.4. The daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Nagesh Nagar slum areas. The measurement of spread of solid waste pollution around tin bin was pointed at the time of field work. The details of same were presented in Table no. 4.6 and Figure No. 4.4. This shows that the total area under solid waste pollution in 17sq.mts and the adjacent slum huts to it are 28 which include the 76 population.

**Table No.4.6:** Status of Tin Bin Causing Solid Waste Pollution in Nagesh Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	09	12	28	02
2	08	16	48	03
Total	17	28	76	05

*Source: Own Sample Surveyed.*

**2.1.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect for sanitation in Nagesh Nagar slum. There are about four drinking water taps. These are situated at different sites which are shown in Figure no.4.4. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table no.4.7 and Figure no4.4. This shows 65sq.mts of marshy and water pollution area which is adjacent 99 slum huts, which include the 191 population.

**Table No.4.7:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Nagesh Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts.)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	16	32	62	03
2	15	22	48	04
3	16	20	39	03
4	18	25	42	03
Total	65	99	191	13

*Source: Own Sample Surveyed.*

**2.1.2.3. Toilet Seats Causing solid waste & water pollution:**

In Nagesh Nagar slum there are about two toilet seats kept at different site which are shown in Figure no4.4. At the time of field visit observation of toilet seats these are create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no4.4 and Table no. 4.8. This shows that the total area under solid waste, water pollution and land pollution is about 25sq.mts and the adjacent slum huts to this area are 22 which include the 62 population.

**Table No.4.8:** Status of Toilet Seats Causing solid waste & water pollution in Nagesh Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	09	12	32	04
2	16	10	30	03
Total	25	22	62	07

*Source: Own Sample Surveyed.*

**2.1.2.4. Water borne disease reported in 2012:**

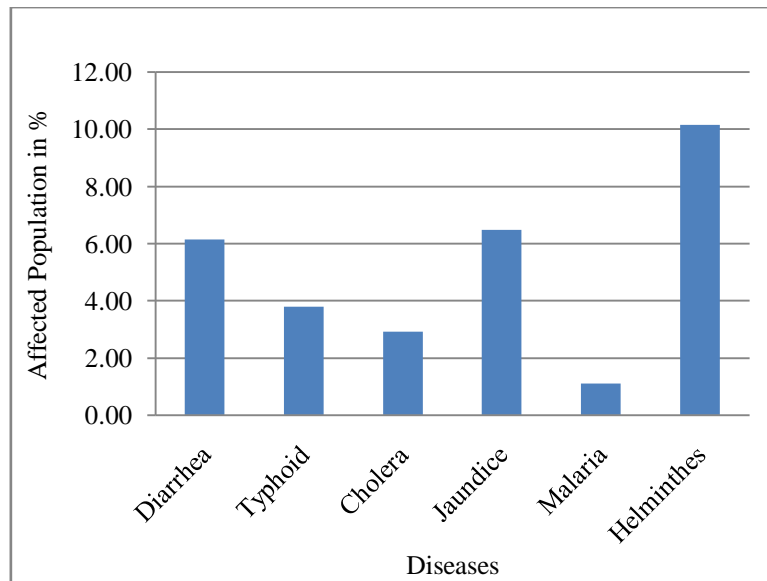
In Nagesh Nagar slum emergence environmental problems like Solid waste pollution, land pollution, water pollution and air pollution due to lack of latrine facilities, poor sanitary condition and poor quality of water leads to various water borne diseases. According to the analysis with table and graph to study area among water borne diseases are affected on child, young and oldest population in Nagesh Nagar slum. 10.17% population is affected or illness by the Helminths disease due to dirty polluted water stream is flowing and lack of maintenance of drinking water pipe lines. Also these water borne diseases are dangerous for human health of living slum population Nagesh Nagar slum. The details of same were presented in Table no.4.9 and Figure no.4.3. This shows that the water borne disease with age group wise total affected population. Out of the total population 30.63% population are affected due to various water borne diseases in Nagesh Nagar slum.

**Table No.4.9:** Status of Water borne diseases in Nagesh Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	24	1.40	21	1.23	28	1.64	32	1.87	105	6.14
Typhoid	14	0.82	17	0.99	22	1.29	12	0.70	65	3.80
Cholera	10	0.58	14	0.82	20	1.17	06	0.35	50	2.92
Jaundice	28	1.64	23	1.34	37	2.16	23	1.34	111	6.49
Malaria	04	0.23	03	0.18	08	0.47	04	0.23	19	1.11
Helminths	32	1.87	42	2.45	52	3.04	48	2.81	174	10.17
Total	112	6.55	120	7.01	167	9.76	125	7.31	524	30.63
Total Population is 1711										

*Source: Own Sample Surveyed.*





**Figure No.4.3:** Affected Population of Water borne diseases in Nagesh Nagar slum.



**Figure No.4.4:** Google image of Nagesh Nagar Slum in Akurdi Region.

**2.1.3. Ajanta Nagar Slum:**

The Ajanta Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

**2.1.3. 1.Tin Bin Causing Solid Waste Pollution:**

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Ajanta Nagar slum areas. In Ajanta Nagar slum area, There are about two tin bin kept at different sites which has been already shown in the Figure No. 4.6. The details of same were presented in Table no. 4.10 and Figure No. 4.6. This shows that the total area under solid waste pollution is 26sq.mts and the adjacent slum huts are 25 which include the 66 population.

**Table No.4.10:** Status of Tin Bin Causing Solid Waste Pollution in Ajanta Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	12	12	32	03
2	14	13	34	04
Total	26	25	66	07

*Source: Own Sample Surveyed.*

**2.1.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Ajanta Nagar slum there are about five drinking water taps. These are situated at different sites which are shown in Figure No. 4.6. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps. The details of same were presented Table no.4.11 and Figure No. 4.6. This shows 87sq.mts of marshy and water pollution area which is adjacent to 140 slum huts, which include the 282 population.

**Table No.4.11:** Status of Drinking water taps- surrounding wet marshy places to Cause water Pollution in Ajanta Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts.)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	18	22	60	03
2	16	28	40	03
3	12	32	62	04
4	19	28	38	04
5	22	30	82	05
Total	87	140	282	19

*Source: Own Sample Surveyed.*

**2.1.3.3. Toilet Seats Causing solid waste & water pollution:**

The location, daily cleanness and regular water supply of toilet seats is an important aspect for the point of view of sanitation in the urban area as well slum area in Ajanta Nagar slum. There are about two toilet seats it is situated at the different sites. This toilet seats create the solid waste, water pollution, land pollution and also pollution spread around toilet seats. All details regarding this toilet seats and its pollution shown in Figure no. 4.6 and Table no.4.12. This shows 30sq.mts of solid waste, water pollution and land pollution area. This is adjacent to 14 slum huts, which includes the 46 population.

**Table No.4.12:** Status of Toilet Seats Causing solid waste & water pollution in Ajanta Nagar Slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	16	10	30	04
2	14	04	16	03
Total	30	14	46	07

*Source: Own Sample Surveyed.*

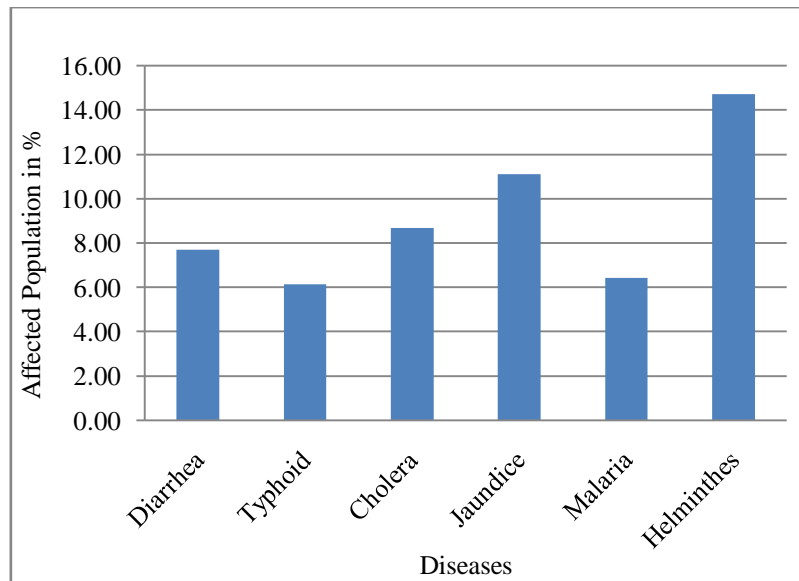
**2.1.3.4. Water borne disease reported in 2012:**

Ajanta Nagar slum face various water borne diseases and environmental problem. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age and old population above 60 year age. 14.73% population is affected by Helminths disease. Other diseases also affected on human health due to lack of latrine facilities and lack of clean drinking water. The details of same were presented in Table no.4.13 and Figure No. 4.5. This shows that the water borne diseases with age group wise total affected population. Out of the total population 54.83% population are affected due to various water borne diseases in Ajanta Nagar slum.

**Table No.4.13: Status of Water borne diseases in Ajanta Nagar slum.**

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	32	0.64	60	1.21	192	3.83	102	2.04	386	7.7
Typhoid	22	0.44	47	0.94	152	3.03	87	1.74	308	6.15
Cholera	58	1.16	77	1.54	128	2.55	172	3.43	435	8.68
Jaundice	42	0.84	68	1.36	267	5.33	180	3.59	557	11.12
Malaria	30	0.6	24	0.48	172	3.43	97	1.94	323	6.45
Helminths	68	1.36	78	1.56	378	7.54	214	4.27	738	14.73
Total	252	5.03	354	7.07	1289	25.71	852	17.01	2747	54.83
Total Population is 5010										

*Source: Own Sample Surveyed.*



**Figure No.4.5:** Affected Population of Water borne diseases in Ajanta Nagar slum.



**Figure No.4.6:** Google image of Ajanta Nagar Slum in Akurdi Region.

**2.2. Chinchwad Region:**

There are four slum pockets in Chinchwad region it is Anand Nagar, Saibaba Nagar, Udyog Nagar and Santosh Nagar slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

**2.2.1. Anand Nagar Slum:**

The Anand Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

**2.2.1. 1.Tin Bin Causing Solid Waste Pollution:**

In Anand Nagar slum area there are about two tin bin kept at different sites which has been already shows in the Figure No. 4.8. the measurement of spread of solid waste pollution around tin bin was pointed at the field work. The details of same were presented in Table no.4.14 and Figure No. 4.8. This shows that the total area under solid waste pollution is 31sq.mts and the adjacent slum huts to it are 28 which include the 90 Population.

**Table No.4.14:** Status of Tin Bin Causing Solid Waste Pollution in Anand Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	09	12	41	04
2	22	16	49	03
Total	31	28	90	07

*Source: Own Sample Surveyed.*

**2.2.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Anand Nagar slum there are about three drinking water taps it is situated at different sites which are shown in Figure No. 4.8. The daily maintenance and cleanness of drinking water pipeline, water taps point, water pollution, land pollution

and measurement of the covered marshy area around the drinking water taps were observed the time of field visit in Anand Nagar slum. The details of same were presented in Table no.4.15 and Figure No. 4.8. This shows 48sq.mts of marshy and polluted water area which is adjacent to 27 slum huts, which include the 106 population.

**Table No.4.15:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Anand Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	08	32	03
2	20	12	44	04
3	16	07	30	05
Total	48	27	106	12

*Source: Own Sample Surveyed.*

**2.2.1.3. Toilet Seats Causing solid waste & water pollution:**

The regular water supply and well maintenance of toilet seats to protect the slum huts from solid waste, water pollution and land pollution. There are about two toilet seats situated at the different sites in Anand Nagar slum. It is shown in Figure No. 4.8. This toilet seats create water and land pollution it spread around the toilet seats. The details of same were shown in Figure No. 4.8 and Table no.4.16. These shows that the total area under solid waste, water pollution and land pollution is about 20sq.mts and the adjacent slum huts to this area are 10, which include the 38 population.

**Table No.4.16:** Status of Toilet Seats Causing solid waste & water pollution in Anand Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	08	04	16	04
2	12	06	22	05
Total	20	10	38	09

*Source: Own Sample Surveyed.*

#### **2.2.1.4. Water borne disease reported in 2012:**

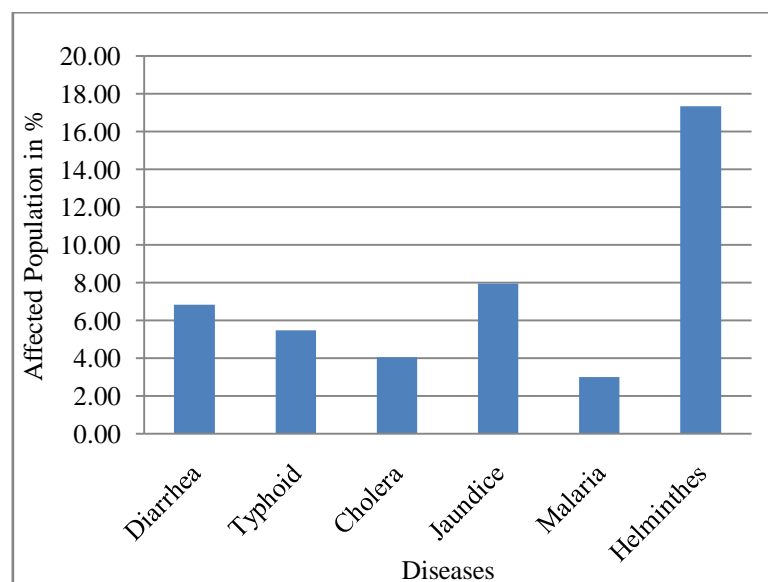
There are many problems in Anand Nagar slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age. In Anand Nagar slum out of the total population 44.54% population are affected by water borne diseases. 17.32% population is affected by Helminths disease due to polluted water. All the details of same were presented in Table no.4.17 and Figure no.4.7 of Anand Nagar slum.



**Table No.4.17:** Status of Water borne diseases in Anand Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	7	0.72	9	0.93	33	3.40	17	1.75	66	6.80
Typhoid	4	0.41	8	0.82	26	2.68	15	1.55	53	5.46
Cholera	6	0.62	10	1.03	12	1.24	11	1.13	39	4.02
Jaundice	7	0.72	29	2.99	23	2.37	18	1.86	77	7.94
Malaria	5	0.52	9	0.93	8	0.82	7	0.72	29	2.99
Helminths	7	0.72	27	2.78	48	4.95	86	8.87	168	17.32
Total	36	3.71	92	9.48	150	15.46	154	15.88	432	44.54
Total Population is 970										

*Source: Own Sample Surveyed.*



**Figure No.4.7:** Affected Population of Water borne diseases in Anand Nagar slum.



**Figure No.4.8:** Google image of Anand Nagar Slum in Chinchwad Region.

### **2.2.2. Saibaba Nagar Slum:**

The Saibaba Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### **2.2.2. 1.Tin Bin Causing Solid Waste Pollution:**

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the urban area as well as in the slum areas. In Saibaba Nagar slum area, there are about three tin bin Kept at different sites which has been already shown in the Figure no.4.10. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no.4.18 and Figure no.4.10. This shows that the total area under solid waste pollution is 25sq.mts and the adjacent slum huts to it are 19 which include the 70 population.

**Table No.4.18:** Status of Tin Bin Causing Solid Waste Pollution in Saibaba Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	08	09	32	02
2	08	04	14	02
3	09	06	24	02
Total	25	19	70	06

*Source: Own Sample Surveyed.*

**2.2.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Saibaba Nagar slum there are four about drinking water taps it is situated at different sites. which are shown in Figure no. 4.10. At the time of field work observation of daily cleanness and maintenance of drinking water taps points, drinking water pipeline, covered marshy area and polluted water around the drinking water taps. All these details of same were shown in Table no.4.19 and Figure no Figure no.4.10. This shows that the total area under marshy, water pollution and land pollution is 64sq.mts and the adjacent slum huts to it are 104 which include the 291 population.

**Table No.4.19:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Saibaba Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	18	42	112	03
2	14	22	60	04
3	16	18	49	03
4	16	22	70	05
Total	64	104	291	15

*Source: Own Sample Surveyed.*

**2.2.2.3. Toilet Seats Causing solid waste & water pollution:**

The cleanness, well maintenance and regularly water supply of toilet seats are a very important aspect for sanitation in Saibaba Nagar slum. There are three toilet seats. These are situated at different sites which are shown in Figure no.4.10. The observation of daily cleanness, measurement of the spread solid waste area and water pollution around the toilet seats at the time of field visit. The details of same were presented in Table no.4.20 and Figure no.4.10. These shows 40Sq.mts areas are Land and water polluted which is adjacent to 39 slum huts, which include the 129 population.

**Table No.4.20:** Status of Toilet Seats Causing solid waste & water pollution in Saibaba Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	15	50	04
2	16	16	47	04
3	12	08	32	05
Total	40	39	129	13

*Source: Own Sample Surveyed.*

**2.2.2.4. Water borne disease reported in 2012:**

There are many problems in Saibaba Nagar slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with Table and graphs to study area among water borne diseases are affected on young population in between 15 to 59 year age. Near about 14.06% and 11.17% population in Saibaba Nagar slum Affected or Illness by Helminths and Diarrhea Diseases. Because in the slum dirty polluted water stream are flowing, lack of sanitation facilities and lack of health services or facilities. Also these water borne diseases are dangerous for human health of living slum population in Saibaba Nagar slum. The details of same were presented in Table no.4.21 and Figure no.4.9. This shows that the water borne diseases with age group wise total affected population. Out of the total population 54.92% population are affected due to water borne diseases in Saibaba Nagar slum.

**Table No.4.21:** Status of Water borne diseases in Saibaba Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	11	0.86	21	1.64	92	7.19	19	1.48	143	11.17
Typhoid	08	0.63	16	1.25	64	5.00	14	1.09	102	7.97
Cholera	09	0.70	19	1.48	54	4.22	13	1.02	95	7.42
Jaundice	14	1.09	22	1.72	62	4.84	19	1.48	117	9.14
Malaria	02	0.16	08	0.63	48	3.75	08	0.63	66	5.16
Helminths	19	1.48	22	1.72	120	9.38	19	1.48	180	14.06
Total	63	4.92	108	8.44	440	34.38	92	7.19	703	54.92
Total Population is 1280										

*Source: Own Sample Surveyed.*

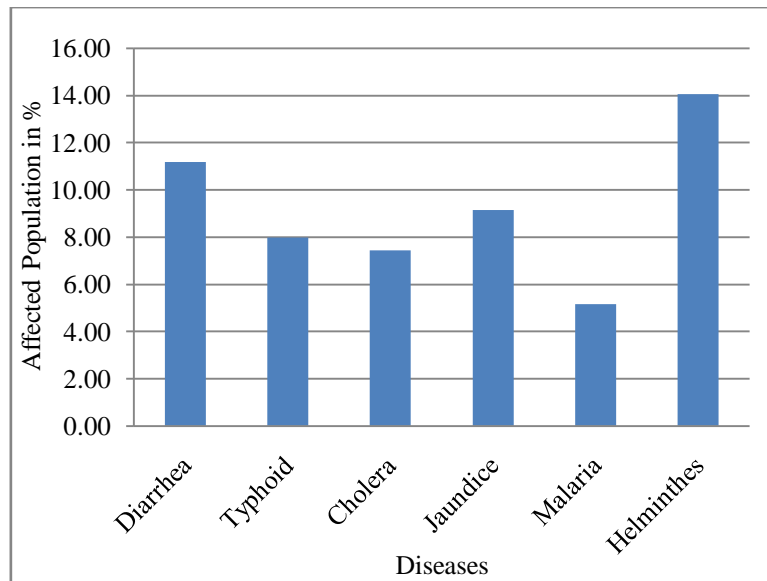


Figure No.4.9: Affected Population of Water borne diseases in Saibaba Nagar slum.

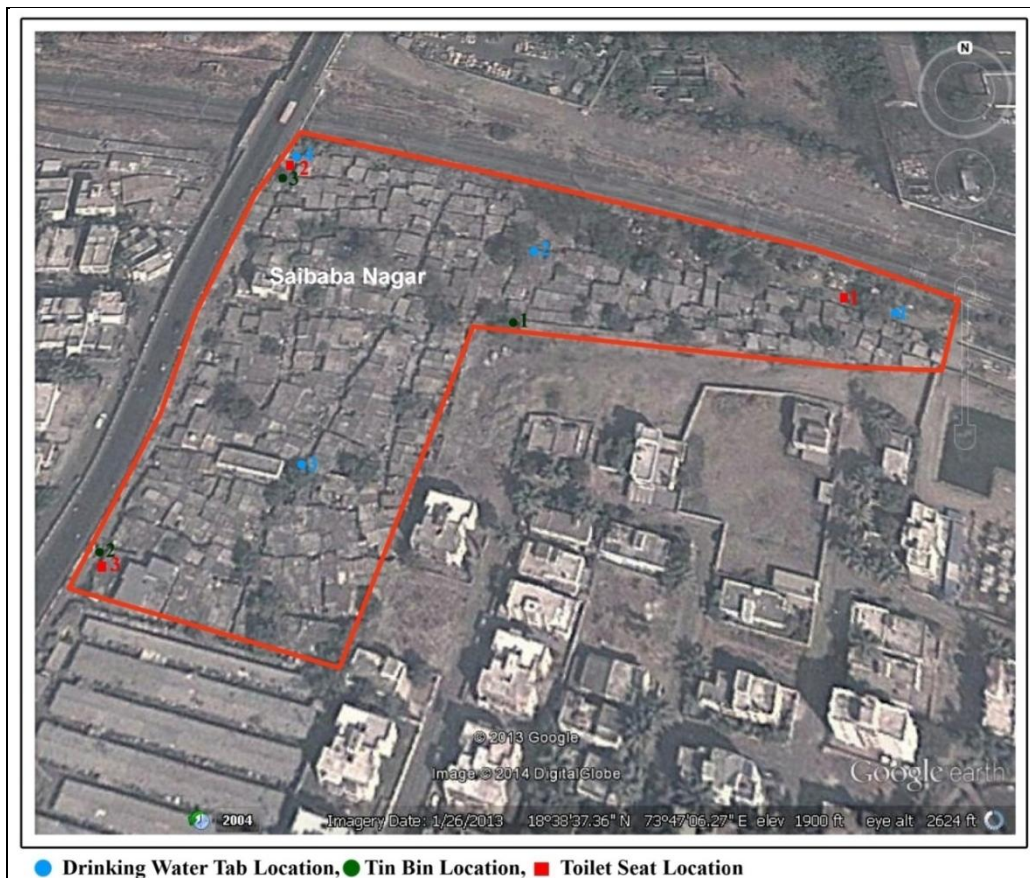


Figure No.4.10: Google image of Saibaba Nagar Slum in Chinchwad Region.

**2.2.3. Udyog Nagar Slum:**

The Udyog Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

**2.2.3. 1.Tin Bin Causing Solid Waste Pollution:**

In Udyog Nagar slum area there are about four tin bin kept at different sites which has been already shown in the Figure no. 4.12. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all detail of same were presented in Table no.4.22 and Figure no. 4.12. This shows that the total area under solid waste pollution is 64sq.mts and adjacent slum huts are 66 which include the 184 population.

**Table No.4.22:** Status of Tin Bin Causing Solid Waste Pollution in Udyog Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	16	22	60	08
2	20	22	60	03
3	20	10	32	04
4	08	12	32	02
Total	64	66	184	17

*Source: Own Sample Surveyed.*

**2.2.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect from the point of view of sanitation in the urban area as well as in the slum area. In Udyog Nagar slum are there are about five drinking water taps situated at different sites which has been already shown in the Figure no. 4.12. The observation regarding the daily cleanness and maintenance of drinking water pipeline, water taps point, water pollution and measurement of the covered marshy area around the drinking water taps were observed at the time of field work in Udyog Nagar slum.

The details of same were presented in Table no.4.23 and Figure no. 4.12. This shows 68sq.mts of marshy and water pollution area which is adjacent 123 slum huts, which include the 319 population.

**Table No.4.23:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Udyog Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	15	45	04
2	12	18	52	04
3	16	28	62	05
4	08	32	90	03
5	18	30	70	05
Total	68	123	319	21

*Source: Own Sample Surveyed.*

### **2.2.3.3. Toilet Seats Causing solid waste & water pollution:**

Daily cleanliness, well maintenance & regular water supply of toilet seats is a important aspect from the point of view of sanitation in the urban area as well as in the slum areas in Udyog Nagar slum. There are about two toilet seats kept at different locations. This toilet seats create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.12 and Table no.4.24. This shows that the total area under solid, water and Land pollution is about 26Sq.mts. & the adjacent huts to this area are 32 which include the 78 population.



**Table No.4.24:** Status of Toilet Seats Causing solid waste & water pollution in Udyog Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	18	36	04
2	14	14	42	03
Total	26	32	78	07

*Source: Own Sample Surveyed.*

**2.2.3.4. Dirty water polluted stream affecting slums insanitation:**

In Udyog Nagar slum area has 1010rmts of internal gutters flowing openly very close to slum huts where as it has also a natural stream at the western side of slum zone having length 210rmts. 180rmts flowing area of this stream has been altered with cement concrete layer and remains 30rmts flowing area of this stream with mud build layer. All these layer to control the monsoon flow and to protect the slum from it. This stream is non-perennial it has become a perennial due to continuous supply of gutter water from the adjacent slum zone. The nearness of dirty gutter and polluted stream causes the insanitation to almost all the slum huts, which are close to the gutter of the streams, the water delivered in the gutter will go to stream and automatically pollute the main rive Pawana it is shown Figure no. 4.12 and Table no.4.25.

**Table No.4.25:** Status of Dirty water polluted stream affecting slums insanitation in Udyog Nagar slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
1010	210

*Source: Own Sample Surveyed.*

**2.2.3.5. Water borne disease reported in 2012:**

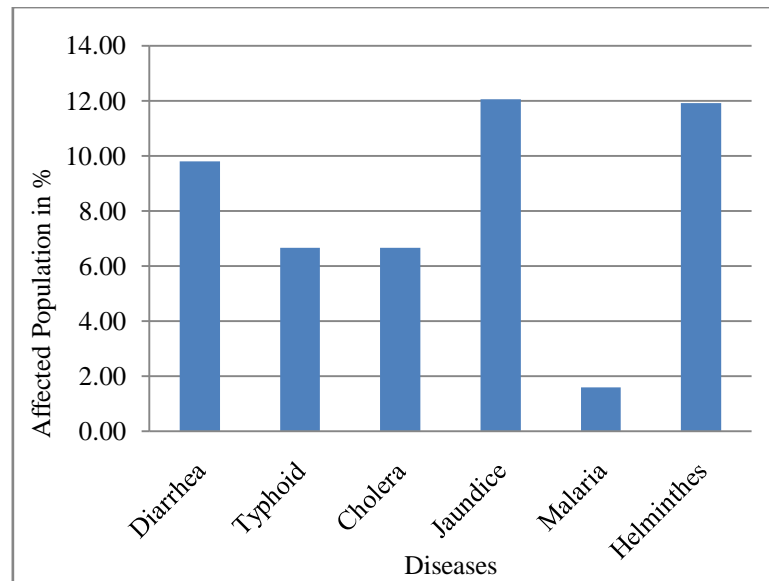
In Udyog Nagar slum emergence environmental problems like Solid waste pollution, land pollution, water pollution and air pollution due to lack of latrine facilities, poor sanitary condition and poor quality of water leads to various water borne diseases. According to the analysis with table and graph to study area among water borne diseases are affected on child, young and oldest population in Udyog Nagar slum. 11.91% population are affected or illness due to the Helminths disease

and 12.04% population are affected or illness due to the Jaundice disease because in this slum dirty polluted water stream are flowing and lack of maintenance of drinking water pipe lines. Also these water borne diseases are dangerous for human health of living slum population Udyog Nagar slum. The details of same were presented in Table no. 4.26 and Figure no4.11. This shows that the water borne disease with age group wise total affected population. Out of the total population 48.62% population are affected due to various water borne diseases in Udyog Nagar slum.

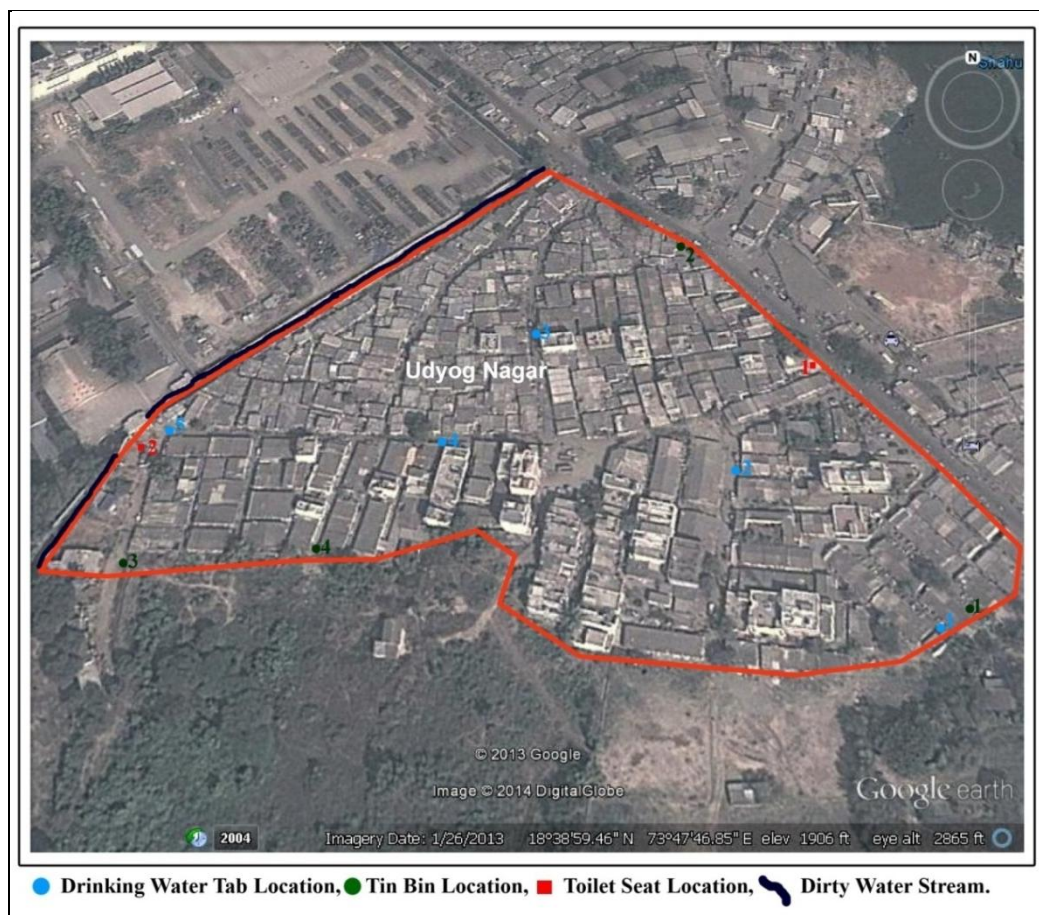
**Table No.4.26:** Status of Water borne diseases in Udyog Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	42	1.35	72	2.31	174	5.59	17	0.55	305	9.79
Typhoid	26	0.83	43	1.38	109	3.50	29	0.93	207	6.65
Cholera	17	0.55	60	1.93	117	3.76	13	0.42	207	6.65
Jaundice	39	1.25	67	2.15	206	6.62	63	2.02	375	12.04
Malaria	05	0.16	18	0.58	19	0.61	07	0.22	49	1.57
Helminths	47	1.51	74	2.38	187	6.01	63	2.02	371	11.91
Total	176	5.65	334	10.73	812	26.08	192	6.17	1514	48.62
Total Population is 3114										

*Source: Own Sample Surveyed.*



**Figure No.4.11:** Affected Population of Water borne diseases in Udyog Nagar slum.



**Figure No.4.12:** Google image of Udyog Nagar Slum in Chinchwad Region.

**2.2.4. Santosh Nagar Slum:**

The Santosh Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

**2.2.4. 1.Tin Bin Causing Solid Waste Pollution:**

In Santosh Nagar slum area there are about two tin bin kept at different site and its measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no.4.27 and Figure no. 4.14. This shows that the total area under solid waste pollution is 28sq.mts and adjacent slum huts are 54 which include the 139 population.

**Table No.4.27:** Status of Tin Bin Causing Solid Waste Pollution in Santosh Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	16	32	90	03
2	12	22	49	04
Total	28	54	139	07

*Source: Own Sample Surveyed.*

**2.2.4.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

Daily cleanness, well maintenance and regular water supply of drinking water taps is an important aspect for sanitation in Santosh Nagar slum. There are about five drinking water taps situated at different sites which are shown in Figure no. 4.14. At the time of field visit observation of drinking water pipeline, water taps point, water pollution, land pollution and measurement of the covered marshy area around the drinking water taps. The details of same were presented in Table no.4.28 and Figure no. 4.14. This shows that the total area under marshy and water pollution is 44sq.mts and adjacent slum huts to it are 116 which include the 318 population.

**Table No.4.28:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Santosh Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	22	66	04
2	08	20	60	03
3	14	24	72	04
4	06	32	78	03
5	04	18	42	05
Total	44	116	318	19

*Source: Own Sample Surveyed.*

**2.2.4.3. Toilet Seats Causing solid waste & water pollution:**

In Santosh Nagar slum there are about two toilet seats kept at different site which are shown in Figure no. 4.14. At the time of field visit observation of toilet seats these are create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.14 and Table no.4.29. This shows that the total area under solid waste, water pollution and land pollution is about 22sq.mts and the adjacent slum huts to this area are 34 which include the 103 population.

**Table No.4.29:** Status of Toilet Seats Causing solid waste & water pollution in Santosh Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	18	55	04
2	10	16	48	07
Total	22	34	103	11

*Source: Own Sample Surveyed.*

**2.2.4.4. Dirty water polluted stream affecting slums insanitation:**

The Santosh Nagar slum zone has 340rmts of internal gutters, flowing openly very close to slum huts, where as it has also a natural stream at the northeastern side of slum zone having a length of 290rmts. This stream are flowing with un concrete layer also natural flow and to protect the slum huts from it the nearness of dirty gutter and polluted stream causes insanitation to almost all the slum huts. Most of the part of this slum is close to stream. This gutter will go to stream and automatically pollute the main river Pawana. It is shown Figure no. 4.14 and Table no.4.30.

**Table No.4.30:** Status of Dirty water polluted stream affecting slums insanitation in Santosh Nagar slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
340	290

*Source: Own Sample Surveyed.*

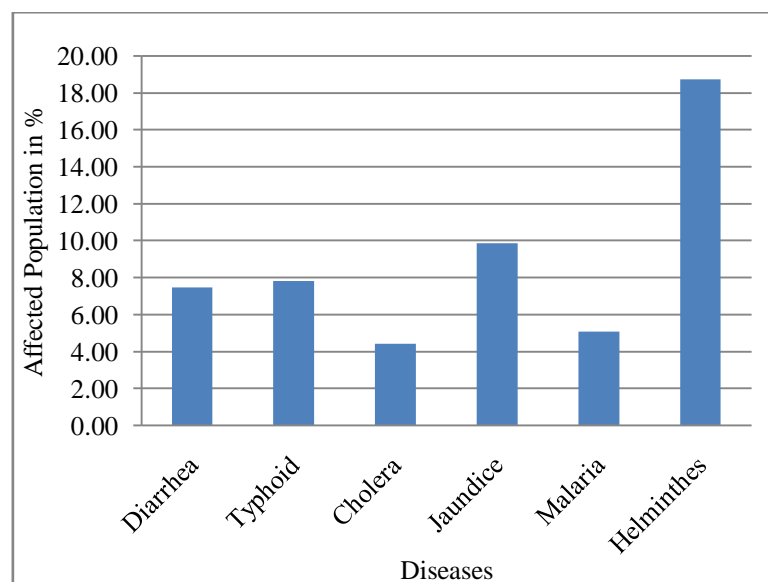
**2.2.4.5. Water borne disease reported in 2012:**

Santosh Nagar slum face various water borne diseases and environmental problem. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age. 18.71% population is affected by Helminths disease. Other diseases also affected on human health due to lack of latrine facilities and lack of clean drinking water. The details of same were presented in Table no. 4.31 and Figure no. 4.13. This shows that the water borne diseases with age group wise total affected population. Out of the total population 53.40% population are affected due to various water borne diseases in Santosh Nagar slum.

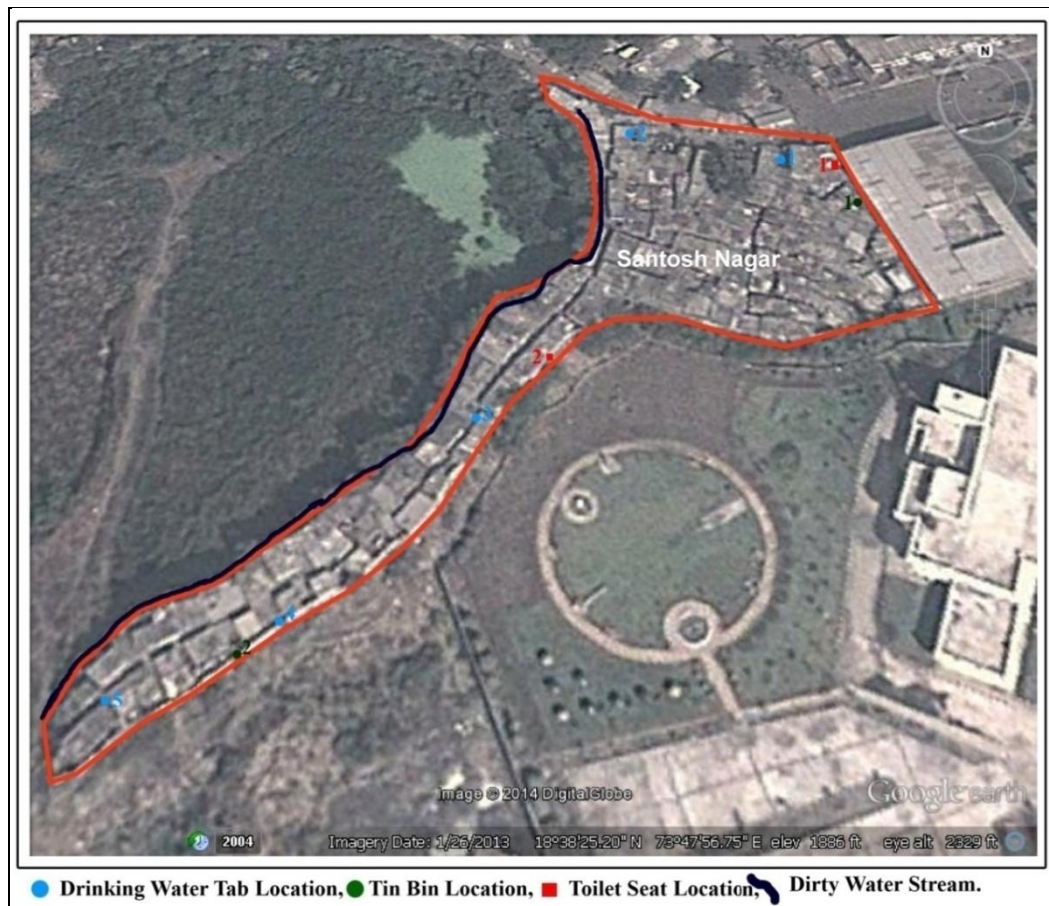
**Table No.4.31:** Status of Water borne diseases in Santosh Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	02	0.68	04	1.36	09	3.06	07	2.38	22	7.48
Typhoid	03	1.02	03	1.02	14	4.76	03	1.02	23	7.82
Cholera	02	0.68	04	1.36	05	1.70	02	0.68	13	4.42
Jaundice	04	1.36	04	1.36	17	5.78	04	1.36	29	9.86
Malaria	03	1.02	03	1.02	06	2.04	03	1.02	15	5.10
Helminths	15	5.10	12	4.08	19	6.46	09	3.06	55	18.71
Total	29	9.86	30	10.20	70	23.81	28	9.52	157	53.40
Total Population is 294										

*Source: Own Sample Surveyed.*



**Figure No.4.13:** Affected Population of Water borne diseases in Santosh Nagar slum.



**Figure No.4.14:** Google image of Santosh Nagar Slum in Chinchwad Region.

### 2.3. Wakad Region:

There are three slum pockets in Wakad region it is Kalakhadak, Tapkir Nagar and Annabhau Sathe Nagar slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

#### 2.3.1. Kalakhadak Slum:

The Kalakhadak slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

##### 2.3.1. 1. Tin Bin Causing Solid Waste Pollution:

In Kalakhadak slum area there are about four tin bin kept at different site which has been already shown in the Figure no. 4.16. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all detail of same was presented in Table no. 4.32 and Figure no.



4.16. This shows that the total area under solid waste pollution is 62sq.mts and adjacent slum huts are 110 which include the 284 population.

**Table No.4.32:** Status of Tin Bin Causing Solid Waste Pollution in Kalakhadak Slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	12	30	82	04
2	18	40	92	03
3	22	22	68	08
4	10	18	42	09
Total	62	110	284	24

*Source: Own Sample Surveyed.*

**2.3.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps & location of water taps is a very important aspect for sanitation in Kalakhadak slum. There are about five drinking water taps. These are situated at different sites which are shown in Figure no. 4.16. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table no. 4.33 and Figure no. 4.16. This shows 59sq.mts of marshy & Water pollution area which is adjacent to 124 slum huts, which include the 302 population.

**Table No.4.33:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Kalakhadak Slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	09	18	36	03
2	12	42	92	02
3	10	30	78	03
4	14	22	60	05
5	14	12	36	06
Total	59	124	302	19

*Source: Own Sample Surveyed.*

**2.3.1.3. Toilet Seats Causing solid waste & water pollution:**

The location, daily cleanness and regular water supply of toilet seats is an important aspect for the point of view of sanitation in the urban area as well slum area in Kalakhadak slum. There are about two toilet seats it is situated at the different sites. This toilet seats create the solid waste, water pollution, land pollution and also pollution spread around toilet seats. The all details regarding this toilet seats and its pollution shown in Figure no. 4.16 and Table no.4.34. This shows 18sq.mts of solid waste, water pollution and land pollution area. This is adjacent to 27 slum huts, which includes the 58 population.

**Table No.4.34:** Status of Toilet Seats Causing solid waste & water pollution in Kalakhadak slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	08	12	36	04
2	10	15	22	04
Total	18	27	58	08

*Source: Own Sample Surveyed.*

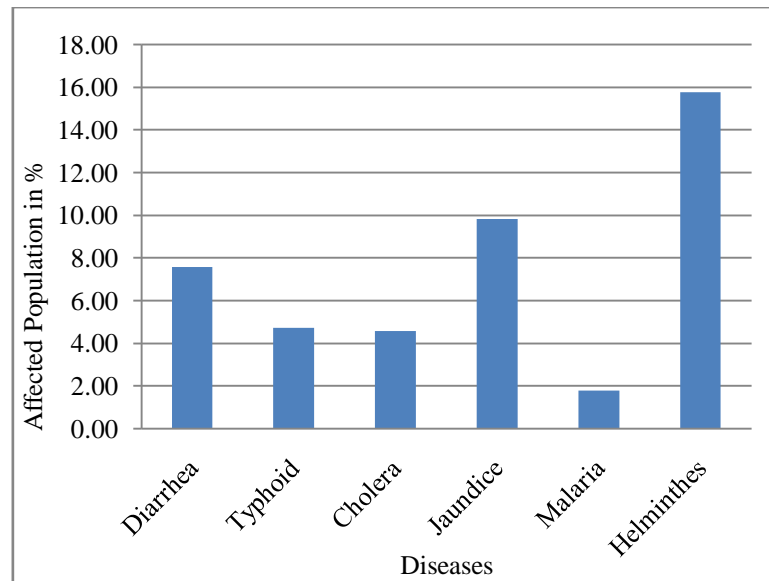
**2.3.1.4. Water borne disease reported in 2012:**

There are many problems in Kalakhadak slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with table and graph to study area among water borne diseases affected on young population in between 05 to 59 year age. In Kalakhadak slum out of the total population 44.23% population are affected by water borne diseases and near about 15.78% population is affected by Helminths disease due to polluted water. All the details of same were presented in Table no.4.35 and Figure no.4.15 of Kalakhadak slum.

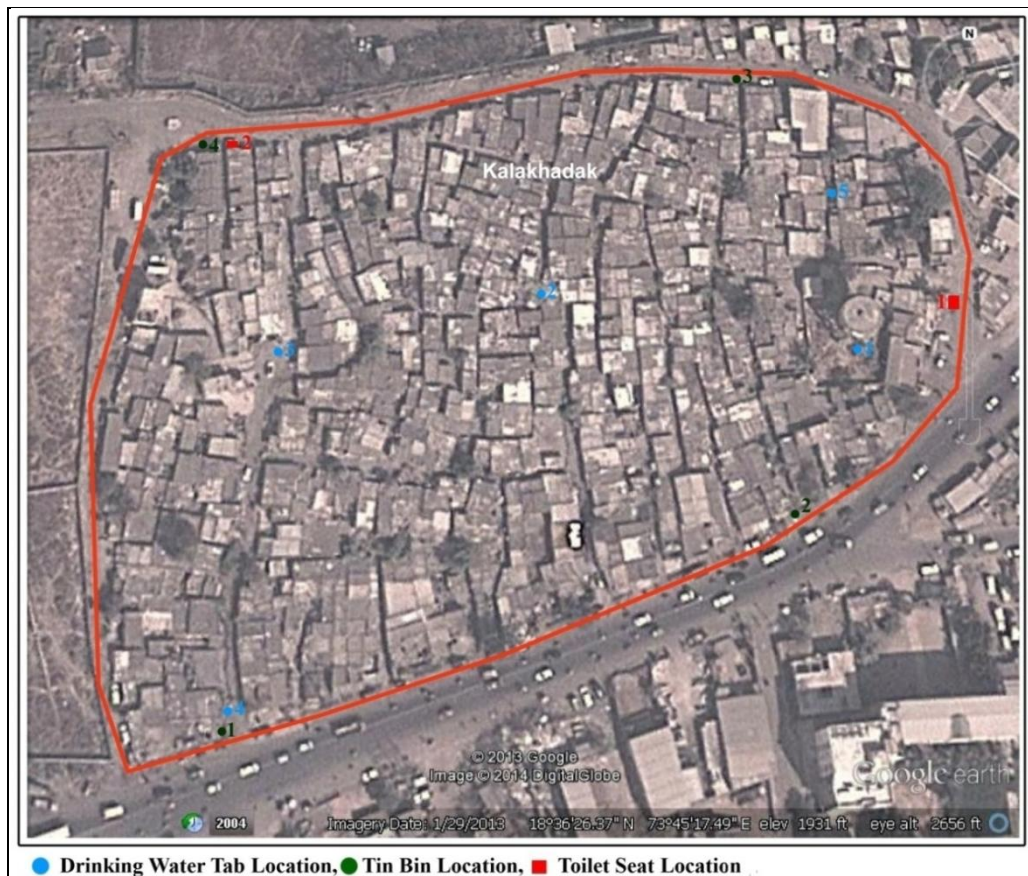
**Table No.4.35:** Status of Water borne diseases in Kalakhadak slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	35	1.68	52	2.50	58	2.79	12	0.58	157	7.56
Typhoid	20	0.96	18	0.87	42	2.02	08	0.38	98	4.72
Cholera	11	0.53	15	0.72	62	2.98	07	0.34	95	4.57
Jaundice	48	2.31	36	1.73	84	4.04	36	1.73	204	9.82
Malaria	09	0.43	12	0.58	09	0.43	07	0.34	37	1.78
Helminths	54	2.60	85	4.09	142	6.83	47	2.26	328	15.78
Total	177	8.52	218	10.49	397	19.10	117	5.63	919	44.23
Total Population is 2078										

*Source: Own Sample Surveyed.*



**Figure No.4.15:** Affected Population of Water borne diseases in Kalakhadak slum.



**Figure No.4.16:** Google image of Kalakhadak Slum in Wakad Region.

**2.3.1. Tapkir Nagar Slum:**

The Tapkir Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

**2.3.2.1. Tin Bin Causing Solid Waste Pollution:**

In Tapkir Nagar slum area. There are about three tin bin kept at different sites. Which has been already showing in the Figure no. 4.18. The daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Tapkir Nagar slum areas. The measurement of spread of solid waste pollution around tin bin was pointed at the time of field work. The details of same were presented in Table no. 4.36 and Figure no. 4.18. This shows that the total area under solid waste pollution in 45sq.mts and the adjacent slum huts to it are 69 which include the 164 population.

**Table No.4.36:** Status of Tin Bin Causing Solid Waste Pollution in Tapkir Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	15	15	32	08
2	18	24	42	09
3	12	30	90	04
Total	45	69	164	21

*Source: Own Sample Surveyed.*

**2.3.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect for sanitation in Tapkir Nagar slum. There are about five drinking water taps. These are situated at different sites which are shown in Figure no. 4.18. the observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table no.4.37 and Figure no. 4.18. This shows 47sq.mts of marshy

and water pollution area which is adjacent 91slum huts, which include the 231 population.

**Table No.4.37:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Tapkir Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	08	15	45	03
2	12	22	48	04
3	08	17	38	03
4	09	22	55	04
5	10	15	45	04
Total	47	91	231	18

*Source: Own Sample Surveyed.*

**2.3.2.3. Toilet Seats Causing solid waste & water pollution:**

The regular water supply and well maintenance of toilet seats to protect the slum huts from solid waste, water pollution and land pollution. There are about two toilet seats situated at the different sites in Tapkir Nagar slum. It is shown in Figure no. 4.18.

This toilet seats create water and land pollution it spread around the toilet seats. The details of same were shown in Figure no. 4.18 and Table no. 4.38. These shows that the total area under solid waste, water pollution and land pollution is about 20sq.mts and the adjacent slum huts to this area are 30, which include the 94 population.

**Table No.4.38:** Status of Toilet Seats Causing solid waste & water pollution in Tapkir Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	08	15	49	04
2	12	15	45	05
Total	20	30	94	09

*Source: Own Sample Surveyed.*

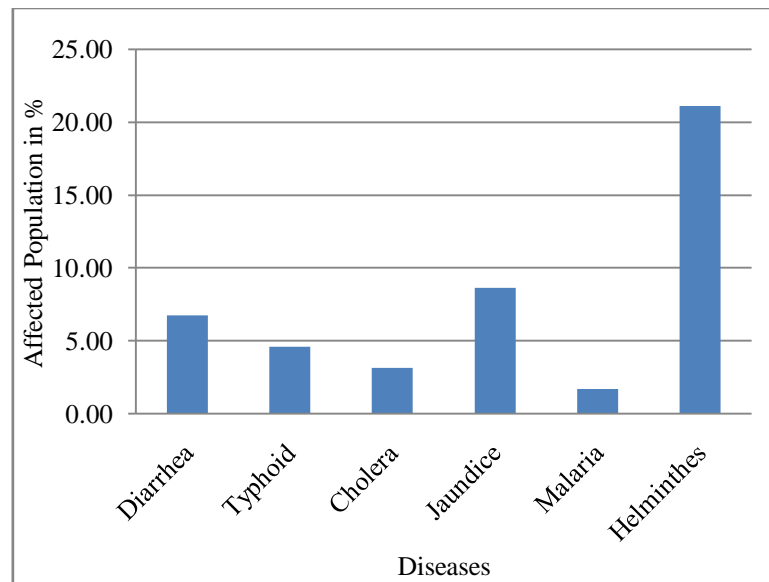
**2.3.2.4. Water borne disease reported in 2012:**

There are many problems in Tapkir Nagar slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with Table and graphs to study area among water borne diseases are affected on the above 60 age group and near about 21.10% population is Affected or Illness by Helminths Diseases due to dirty polluted water stream are flowing, lack of sanitation facilities and lack of health services or facilities. Also these water borne diseases are dangerous for human health of living slum population in Tapkir Nagar slum. The details of same were presented in Table no. 4.39 and Figure no. 4.17. This shows that the water borne diseases with age group wise total affected population. Out of the total population 45.80% population are affected due to water borne diseases in Tapkir Nagar slum.

**Table No.4.39:** Status of Water borne diseases in Tapkir Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	02	0.48	03	0.72	03	0.72	20	4.80	28	6.71
Typhoid	02	0.48	04	0.96	02	0.48	11	2.64	19	4.56
Cholera	03	0.72	02	0.48	01	0.24	07	1.68	13	3.12
Jaundice	06	1.44	09	2.16	09	2.16	12	2.88	36	8.63
Malaria	01	0.24	02	0.48	01	0.24	03	0.72	07	1.68
Helminths	13	3.12	15	3.60	12	2.88	48	11.51	88	21.10
Total	27	6.47	35	8.39	28	6.71	101	24.22	191	45.80
Total Population is 417										

*Source: Own Sample Surveyed.*



**Figure No.4.17:** Affected Population of Water borne diseases in Tapkir Nagar slum.





**Figure No.4.18:** Google image of Tapkir Nagar Slum in Wakad Region.

### **2.3.3. Annabhau Sathe Nagar Slum:**

The Annabhau Sathe Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### **2.3.3. 1.Tin Bin Causing Solid Waste Pollution:**

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Annabhau Sathe Nagar slum areas. In Annabhau Sathe Nagar slum area, There are about three tin bin kept at different sites which has been already shown in the Figure no. 4.20. The details of same were presented in Table no. 4.40 and Figure no. 4.20. This shows that the total area under solid waste pollution is 48sq.mts and the adjacent slum huts are 46 which include the 128 population.

**Table No.4.40:** Status of Tin Bin Causing Solid Waste Pollution in Annabhau Sathe Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in mts.
1	14	10	32	09
2	18	16	48	08
3	16	20	48	03
Total	48	46	128	20

*Source: Own Sample Surveyed.*

**2.3.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Annabhau Sathe Nagar slum there are about four drinking water taps. These are situated at different sites which are shown in Figure no. 4.20. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps. The details of same were presented Table no. 4.41 and Figure no. 4.20. This shows 50sq.mts of marshy and water pollution area which is adjacent to 65 slum huts, which include the 170 population.

**Table No.4.41:** Status of Drinking water taps- surrounding wet marsh places to cause water pollution in Annabhau Sathe Nagar slum

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	12	42	06
2	08	16	38	05
3	16	22	58	06
4	12	15	32	04
Total	50	65	170	21

*Source: Own Sample Surveyed.*

**2.3.3.3. Toilet Seats Causing solid waste & water pollution:**

The cleanness, well maintenance and regularly water supply of toilet seats are a very important aspect for sanitation in Annabhau Sathe Nagar slum. There are two toilet seats. These are situated at different sites which are shown in Figure no. 4.20. The observation of daily cleanness, measurement of the spread solid waste area and water pollution around the toilet seats at the time of field visit. The details of same were presented in Table no. 4.42 and Figure no. 4.20. These shows 16Sq.mts areas are Land and water polluted which is adjacent to 27 slum huts, which include the 78 population.

**Table No.4.42:** Status of Toilet Seats Causing solid waste & water pollution in Annabhau Sathe Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	08	12	40	06
2	08	15	38	06
Total	16	27	78	12

*Source: Own Sample Surveyed.*

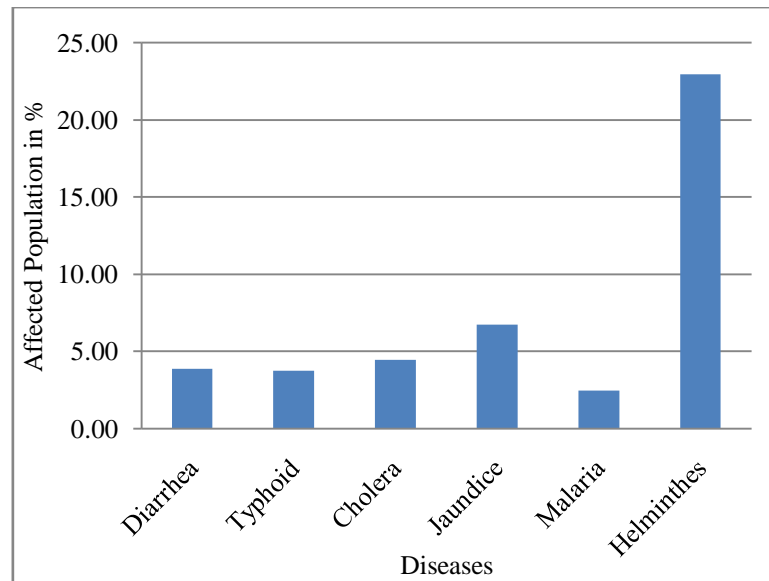
**2.3.3.4. Water borne disease reported in 2012:**

In Annabhau Sathe Nagar slum emergence environmental problems like Solid waste pollution, land pollution, water pollution and air pollution due to lack of latrine facilities, poor sanitary condition and poor quality of water leads to various water borne diseases. According to the analysis with table and graph to study area among water borne diseases are affected on young population in Annabhau Sathe Nagar slum. 22.96% populations are affected or illnesses by the Helminths disease due to dirty polluted water stream are flowing and lack of maintenance of drinking water pipe lines. Also these water borne diseases are dangerous for human health of living slum population Annabhau Sathe Nagar slum. The details of same were presented in Table no. 4.43 and Figure no.4.19. This shows that the water borne disease with age group wise total affected population. Out of the total population 44.19% population are affected due to various water borne diseases in Annabhau Sathe Nagar slum.

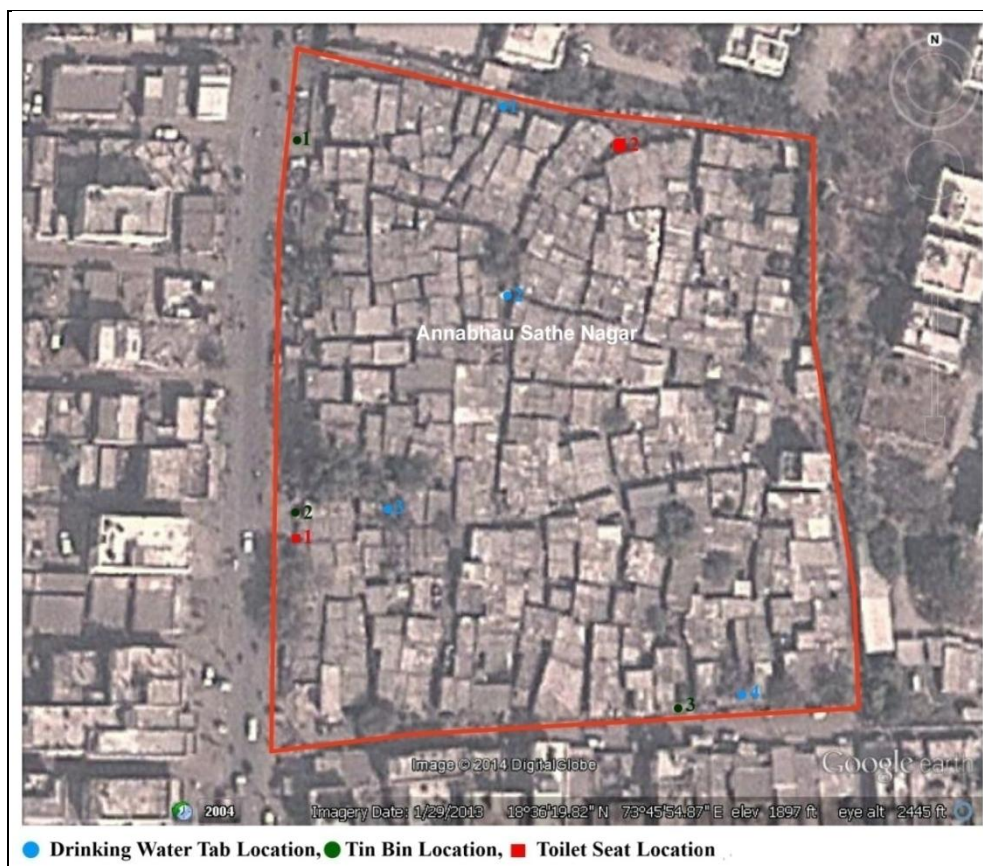
**Table No.4.43:** Status of Water borne diseases in Annabhau Sathe Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	05	0.72	04	0.57	14	2.01	04	0.57	27	3.87
Typhoid	04	0.57	03	0.43	12	1.72	07	1.00	26	3.73
Cholera	05	0.72	06	0.86	17	2.44	03	0.43	31	4.45
Jaundice	04	0.57	12	1.72	19	2.73	12	1.72	47	6.74
Malaria	03	0.43	03	0.43	07	1.00	04	0.57	17	2.44
Helminths	17	2.44	19	2.73	102	14.63	22	3.16	160	22.96
Total	38	5.45	47	6.74	171	24.53	52	7.46	308	44.19
Total Population is 697										

*Source: Own Sample Surveyed.*



**Figure No.4.19:** Affected Population of Water borne diseases in Annabhau Sathe Nagar slum.



**Figure No.4.20:** Google image of Annabhau Sathe Nagar Slum in Wakad Region.

**2.4. Pimpri Region:**

There are three slum pockets in Pimpri region it is Ganesh Nagar, Ramabai Nagar and Link Road slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

**2.4.1. Ganesh Nagar Slum:**

The Ganesh Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

**2.4.1. 1.Tin Bin Causing Solid Waste Pollution:**

In Ganesh Nagar slum area there are about three tin bin kept at different sites which has been already shows in the Figure no. 4.22. The measurement of spread of solid waste pollution around tin bin was pointed at the field work. The details of same were presented in Table no.4.44 and Figure no. 4.22. This shows that the total area under solid waste pollution is 40sq.mts and the adjacent slum huts to it are 54 which include the 138 Population.

**Table No.4.44:** Status of Tin Bin Causing Solid Waste Pollution in Ganesh Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	18	16	48	04
2	12	18	32	06
3	10	20	58	08
Total	40	54	138	18

*Source: Own Sample Surveyed.*

**2.4.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Ganesh Nagar slum there are about four drinking water taps it is situated at different sites which are shown in Figure no. 4.22. The daily maintenance and cleanness of drinking water pipeline, water taps point, water pollution, land pollution

and measurement of the covered marshy area around the drinking water taps were observed the time of field visit in Ganesh Nagar slum. The details of same were presented in Table no.4.45 and Figure no. 4.22. This shows 43sq.mts of marshy and polluted water area which is adjacent to 60 slum huts, which include the 184 population.

**Table No.4.45:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Ganesh Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	08	14	42	03
2	09	16	47	04
3	12	12	37	03
4	14	18	58	04
Total	43	60	184	14

*Source: Own Sample Surveyed.*

**2.4.1.3. Toilet Seats Causing solid waste & water pollution:**

Daily cleanliness, well maintenance & regular water supply of toilet seats is a important aspect from the point of view of sanitation in the urban area as well as in the slum areas in Ganesh Nagar slum. There are about two toilet seats kept at different locations. This toilet seats create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.22 and Table no. 4.46this shows that the total area under solid, water and Land pollution is about 30Sq.mts. & the adjacent huts to this area are 23 which include the 74 population.

**Table No.4.46:** Status of Toilet Seats Causing solid waste & water pollution in Ganesh Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	16	48	04
2	18	07	26	10
Total	30	23	74	14

*Source: Own Sample Surveyed.*

**2.4.1.4. Dirty water polluted stream affecting slums insanitation:**

The Ganesh Nagar slum is located on the left bank of Pawana River and also natural stream at the northeastern side of slum zone having length of 65rmts. This stream altered with the cement concrete layer to control the monsoonal flow but in rainy season this slum is affected due to flood. Even the flowing status of the stream is perennial due to continuously supply of gutter water from the adjacent slum zone and nearest urban area. The nearness of dirty gutter and also dirty polluted water of Pawana River causes the insanitation to almost all the slum huts, which area close to the gutter of streams and the polluted river. It is shown Figure no. 4.22 and Table no. 4.47.

**Table No.4.47:** Status of Dirty water polluted stream affecting slums insanitation in Ganesh Nagar slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
249	65

*Source: Own Sample Surveyed.*

**2.4.1.5. Water borne disease reported in 2012:**

Ganesh Nagar slum face various water borne diseases and environmental problem. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age. The most of population are affected by the Helminths disease it is 21.90% and Jaundice disease it is 10.95%. Other diseases also affected on human health due to lack of latrine facilities and lack of clean drinking water. The details of same were presented in Table no. 4.48 and Figure no.4.21. This shows that the water borne diseases with age

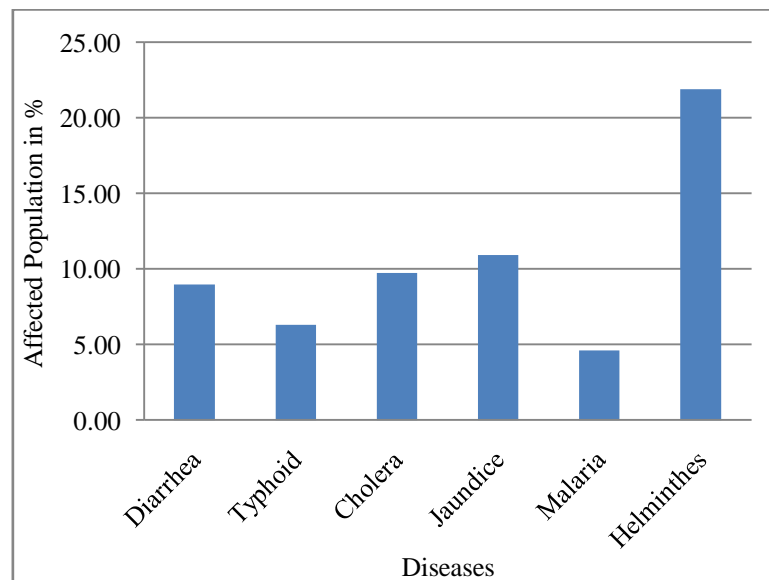


group wise total affected population. Out of the total population 62.53% population are affected due to various water borne diseases in Ganesh Nagar slum.

**Table No.4.48:** Status of Water borne diseases in Ganesh Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	05	1.22	06	1.46	22	5.35	04	0.97	37	9.00
Typhoid	03	0.73	07	1.70	13	3.16	03	0.73	26	6.33
Cholera	06	1.46	09	2.19	19	4.62	06	1.46	40	9.73
Jaundice	05	1.22	14	3.41	17	4.14	09	2.19	45	10.95
Malaria	02	0.49	04	0.97	09	2.19	04	0.97	19	4.62
Helminths	17	4.14	14	3.41	47	11.44	12	2.92	90	21.90
Total	38	9.25	54	13.14	127	30.90	38	9.25	257	62.53
Total Population is 411										

*Source: Own Sample Surveyed.*



**Figure No.4.21:** Affected Population of Water borne diseases in Ganesh Nagar slum.



**Figure No.4.22:** Google image of Ganesh Nagar Slum in Pimpri Region.

#### **2.4.2. Ramabai Nagar Slum:**

The Ramabai Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

##### **2.4.2. 1.Tin Bin Causing Solid Waste Pollution:**

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the urban area as well as in the slum areas. In Ramabai Nagar slum area, there are about two tin bin Kept at different sites which has been already shown in the Figure no. 4.24. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no.4.49 and Figure no. 4.24. This shows that the total area under solid waste pollution is 26sq.mts and the adjacent slum huts to it are 27 which include the 87 population.

**Table No.4.49:** Status of Tin Bin Causing Solid Waste Pollution in Ramabai Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	10	12	40	02
2	16	15	47	04
Total	26	27	87	06

*Source: Own Sample Surveyed.*

**2.4.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Ramabai Nagar slum there are four about drinking water taps it is situated at different sites. which are shown in Figure no. 4.24. At the time of field work observation of daily cleanness and maintenance of drinking water taps points, drinking water pipeline, covered marshy area and polluted water around the drinking water taps. All these details of same were shown in Table no.4.50 and Figure no. 4.24. This shows that the total area under marshy, water pollution and land pollution is 54sq.mts and the adjacent slum huts to it are 48 which include the 161 population.

**Table No.4.50:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Ramabai Nagar slum

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	08	29	04
2	10	18	54	03
3	18	12	44	06
4	14	10	34	08
Total	54	48	161	21

*Source: Own Sample Surveyed.*

**2.4.2.3. Toilet Seats Causing solid waste & water pollution:**

In Ramabai Nagar slum there are about two toilet seats kept at different site which are shown in Figure no. 4.24. At the time of field visit observation of toilet seats these are create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.24 and Table no. 4.51. This shows that the total area under solid waste, water pollution and land pollution is about 24sq.mts and the adjacent slum huts to this area are 10 which include the 40 population.

**Table No.4.51:** Status of Toilet Seats Causing solid waste & water pollution in Ramabai Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	14	04	18	04
2	10	06	22	03
Total	24	10	40	07

*Source: Own Sample Surveyed.*

**2.4.2.4. Dirty water polluted stream affecting slums insanitation:**

The Ramabai Nagar slum zone has 1084rmts of internal gutter, flowing openly very close to slum huts, where as it has also a natural stream at the central part of the slum zone having a length 70rmts. This stream has been altered with the cement concrete layer to control the monsoonal flow and to protect the slum huts from it. Even the natural status of the stream is non-perennial it has becomes a perennial due to continuous supply of gutter water from the adjacent slum zone. The nearness of dirty gutter and polluted stream causes the insanitation to almost all the slum huts, which area close to the gutter of the streams. The water delivered in the gutter will go to stream and automatically pollute the main River Pawana, it is shown Figure no. 4.24 and Table no. 4.52.

**Table No.4.52:** Status of Dirty water polluted stream affecting slums insanitation in Ramabai Nagar slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
1084	70

*Source: Own Sample Surveyed.*

**2.4.2.5. Water borne disease reported in 2012:**

There are many problems in Ramabai Nagar slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with table and graph to study area among water borne diseases affected on Child in between 5 to 14 year age, young population in between 15 to 59 year age and old population in above 60 year age. In Ramabai Nagar slum out of the total population 51.38% population are affected due to water borne diseases. 30.81% population is affected by Helminths disease due to polluted water. All the details of same were presented in Table no.4.53 and Figure no. 4.23.of Ramabai Nagar slum.

**Table No.4.53:** Status of Water borne diseases in Ramabai Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	17	0.59	29	1.00	64	2.21	11	0.38	121	4.17
Typhoid	09	0.31	21	0.72	53	1.83	09	0.31	92	3.17
Cholera	12	0.41	19	0.65	27	0.93	13	0.45	71	2.45
Jaundice	34	1.17	29	1.00	69	2.38	89	3.07	221	7.62
Malaria	09	0.31	16	0.55	60	2.07	07	0.24	92	3.17
Helminths	198	6.82	220	7.58	279	9.61	197	6.79	894	30.81
Total	279	9.61	334	11.51	552	19.02	326	11.23	1491	51.38
Total Population is 2902										

*Source: Own Sample Surveyed.*

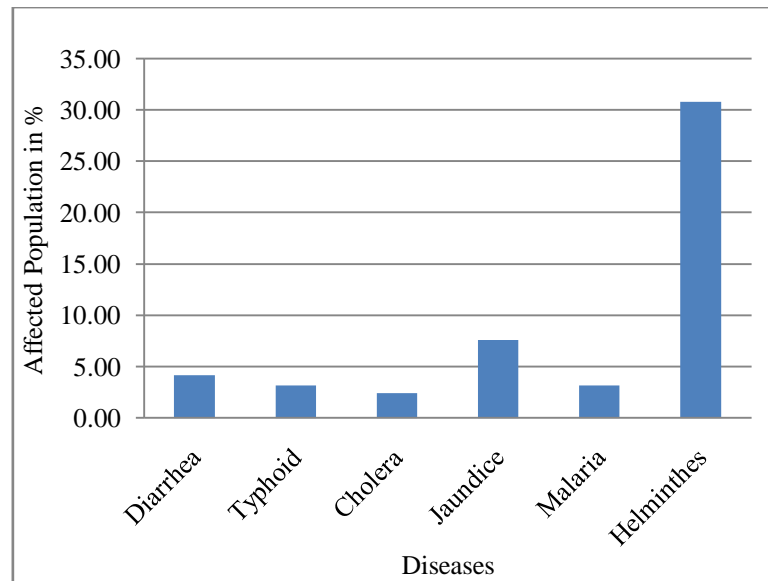


Figure No.4.23: Affected Population of Water borne diseases in Ramabai Nagar slum.



Figure No.4.24: Google image of Ramabai Nagar Slum in Pimpri Region.

#### 2.4.3. Link Road Slum:

The Link Road slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum,

leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

**2.4.3. 1. Tin Bin Causing Solid Waste Pollution:**

In Link Road slum area there are about two tin bin kept at different sites which has been already shown in the Figure no. 4.26. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all detail of same was presented in Table no.4.54 and Figure no. 4.26. This shows that the total area under solid waste pollution is 32sq.mts and adjacent slum huts are 20 which include the 69 population.

**Table No.4.54:** Status of Tin Bin Causing Solid Waste Pollution in Link Road slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	14	08	30	03
2	18	12	39	04
Total	32	20	69	07

*Source: Own Sample Surveyed.*

**2.4.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect from the point of view of sanitation in the urban area as well as in the slum area. In Link Road slum are there are about four drinking water taps situated at different sites which has been already shown in the Figure no. 4.26 the observation regarding the daily cleanness and maintenance of drinking water pipeline, water taps point, water pollution and measurement of the covered marshy area around the drinking water taps were observed at the time of field work in Link Road slum. The details of same were presented in Table no.4.55 and Figure no. 4.26. This shows 56sq.mts of marshy and water pollution area which is adjacent 30 slum huts, which include the 112 population.

**Table No.4.55:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Link Road slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	06	22	07
2	14	07	27	06
3	16	09	34	05
4	12	08	29	04
Total	56	30	112	22

*Source: Own Sample Surveyed.*

**2.4.3.3. Toilet Seats Causing solid waste & water pollution:**

The location, daily cleanness and regular water supply of toilet seats is an important aspect for the point of view of sanitation in the urban area as well slum area in Link Road slum. There are about two toilet seats it is situated at the different sites. This toilet seats create the solid waste, water pollution, land pollution and also pollution spread around toilet seats. The all details regarding this toilet seats and its pollution shown in Figure no. 4.26 and Table no. 4.56. This shows 30sq.mts of solid waste, water pollution and land pollution area. This is adjacent to 25 slum huts, which includes the 79 population.

**Table No.4.56:** Status of Toilet Seats Causing solid waste & water pollution in Link Road slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	14	10	32	06
2	16	15	47	07
Total	30	25	79	13

*Source: Own Sample Surveyed.*



**2.4.3.4. Dirty water polluted stream affecting slums insanitation:**

The Link road slum is located on left bank of Pawana River and also natural stream are flowing at southeastern and northwestern side the slum zone having 135rmts. Both streams have been altered with cement concrete layer to control the monsoonal flow but in rainy season affect by flood of Pawana River. Even the flowing status of the stream is perennial due to continuously supply of gutter water from the adjacent slum zone and nearest urban area. The nearness of dirty gutter and also dirty polluted water of Pawana River causes the insanitation to almost all the slum huts, which area close to the gutter of stream and the polluted river. It is shown Figure no. 4.26 and Table no.4.57.

**Table No.4.57:** Status of Dirty water polluted stream affecting slums insanitation in Link Road slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
937	135

*Source: Own Sample Surveyed.*

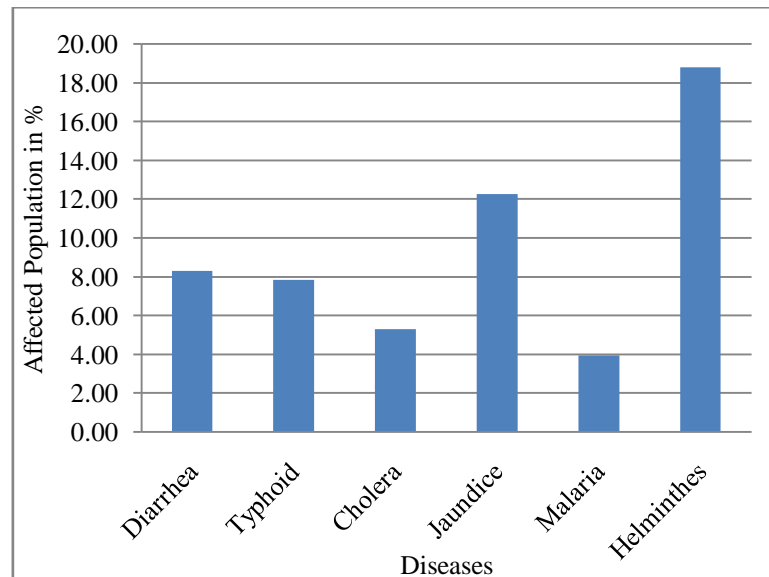
**2.4.3.5. Water borne disease reported in 2012:**

There are many problems in Link Road slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with Table and graphs to study area among water borne diseases are affected on Child in between 5 to 14 year age, young population in between 15 to 59 year age and most of population in Link Road slum Affected or Illness by the Helminths and Jaundice Diseases it is respectively 18.79% and 12.26% because in this slum dirty polluted water stream are flowing, lack of sanitation facilities and lack of healthy services or facilities. Also these water borne diseases are dangerous for human health of living slum population in Link Road slum. The details of same were presented in Table no. 4.58 and Figure no. 4.25. This shows that the water borne diseases with age group wise total affected population. Out of the total population 56.36% population are affected due to water borne diseases in Link Road slum.

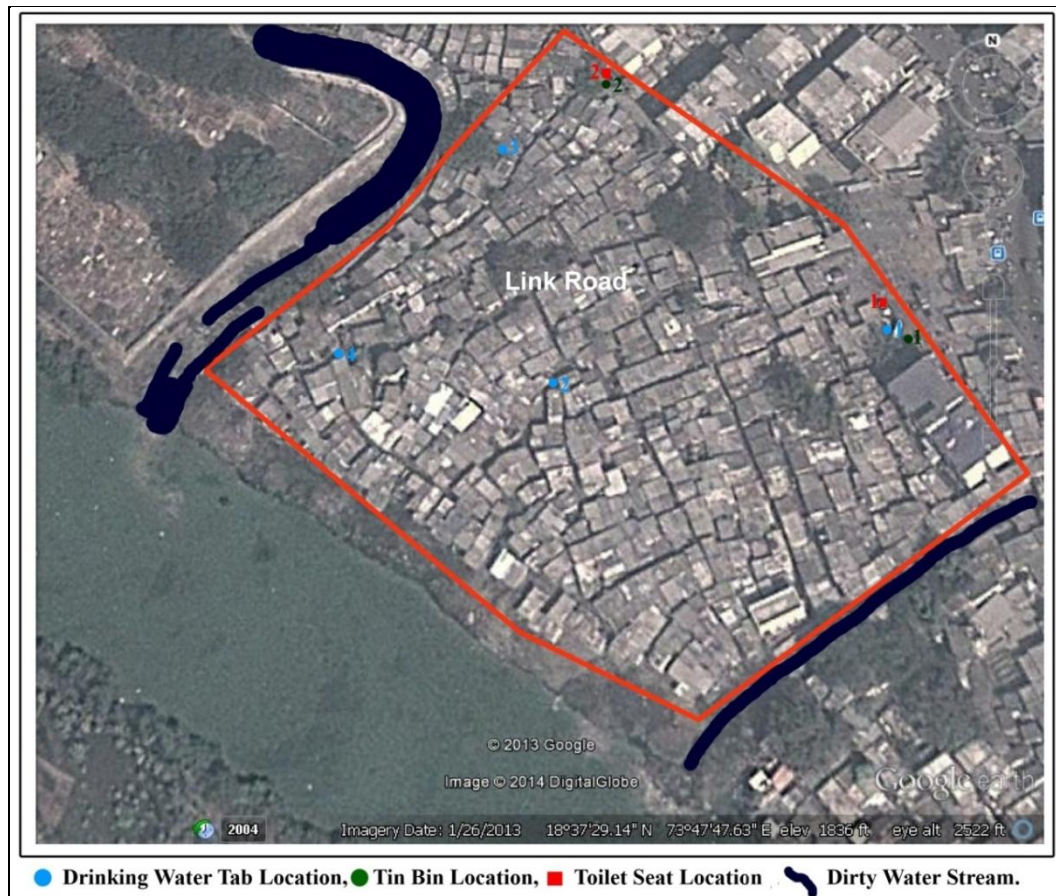
**Table No.4.58:** Status of Water borne diseases in Link Road slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	29	1.65	42	2.38	54	3.06	21	1.19	146	8.29
Typhoid	20	1.14	34	1.93	67	3.80	17	0.96	138	7.83
Cholera	09	0.51	17	0.96	54	3.06	13	0.74	93	5.28
Jaundice	28	1.59	82	4.65	74	4.20	32	1.82	216	12.26
Malaria	08	0.45	19	1.08	33	1.87	09	0.51	69	3.92
Helminths	32	1.82	68	3.86	182	10.33	49	2.78	331	18.79
Total	126	7.15	262	14.87	464	26.33	141	8.00	993	56.36
Total Population is 1762										

*Source: Own Sample Surveyed.*



**Figure No.4.25:** Affected Population of Water borne diseases in Link Road slum.



**Figure No.4.26:** Google image of Link Road Slum in Pimpri Region.

## 2.5. Bhosari Region:

There are four slum pockets in Bhosari region it is Sanjay Nagar Wakhar, Gawali Nagar, Hirabai Landage Chawl and Khandewasti slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

### 2.5.1. Sanjay Nagar Wakhar Slum:

The Sanjay Nagar Wakhar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### 2.5.1.1. Tin Bin Causing Solid Waste Pollution:

In Sanjay Nagar Wakhar slum area there are about five tin bin kept at different site and its measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no.4.59 and Figure no. 4.28. This shows that

the total area under solid waste pollution is 70sq.mts and adjacent slum huts are 50 which include the 167 population.

**Table No.4.59:** Status of Tin Bin Causing Solid Waste Pollution in Sanjay Nagar Wakhar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	18	12	38	04
2	16	06	22	03
3	14	08	33	04
4	10	14	42	04
5	12	10	32	04
Total	70	50	167	19

*Source: Own Sample Surveyed.*

**2.5.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

Daily cleanness, well maintenance and regular water supply of drinking water taps is an important aspect for sanitation in Sanjay Nagar Wakhar slum. There are about six drinking water taps situated at different sites which are shown in Figure no. 4.28. At the time of field visit observation of drinking water pipeline, water taps point, water pollution, land pollution and measurement of the covered marshy area around the drinking water taps. The details of same were presented in Table no. 4.60 and Figure no. 4.28. This shows that the total area under marshy and water pollution is 88sq.mts and adjacent slum huts to it are 78 which include the 241 population.

**Table No.4.60:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Sanjay Nagar Wakhar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	10	28	07
2	14	12	38	06
3	16	13	42	05
4	18	16	49	04
5	14	17	52	03
6	12	10	32	04
Total	88	78	241	29

*Source: Own Sample Surveyed.*

**2.5.1.3. Toilet Seats Causing solid waste & water pollution:**

The regular water supply and well maintenance of toilet seats to protect the slum huts from solid waste, water pollution and land pollution. There are about three toilet seats situated at the different sites in Sanjay Nagar Wakhar slum. It is shown in Figure no. 4.28. This toilet seats create water and land pollution it spread around the toilet seats. The details of same were shown in Figure no. 4.28 and Table no.4.61. These shows that the total area under solid waste, water pollution and land pollution is about 36sq.mts and the adjacent slum huts to this area are 29, which include the 89 population.

**Table no.4.61:** Status of Toilet Seats Causing solid waste & water pollution in Sanjay Nagar Wakhar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	08	22	06
2	14	09	29	05
3	10	12	38	04
Total	36	29	89	15

*Source: Own Sample Surveyed.*

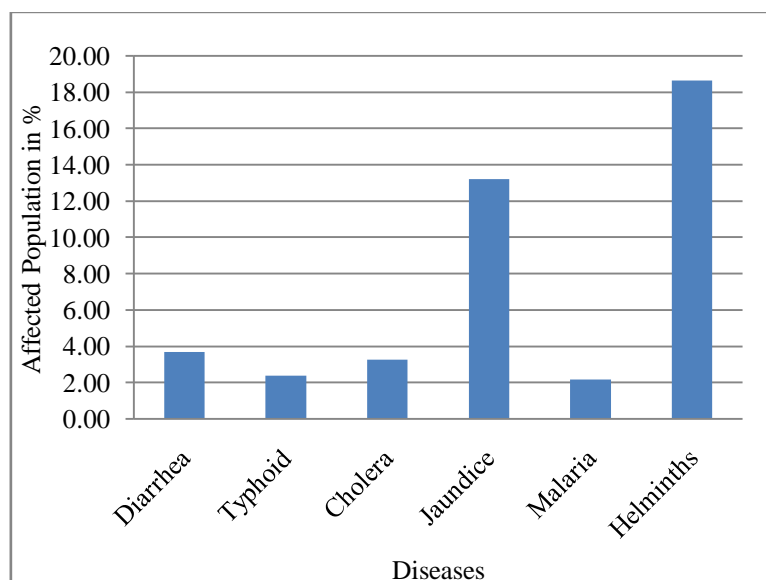
**2.5.1.4. Water borne disease reported in 2012:**

In Sanjay Nagar Wakhar slum emergence environmental problems like Solid waste pollution, land pollution, water pollution and air pollution due to lack of latrine facilities, poor sanitary condition and poor quality of water leads to various water borne diseases. According to the analysis with table and graph to study area among water borne diseases are affected on child, young and oldest population in Sanjay Nagar Wakhar slum. 18.61% population are affected or illness by the Helminths disease and 13.20% population are affected or illness by the Jaundice disease because in this slum dirty polluted water stream are flowing and lack of maintenance of drinking water pipe lines. Also these water borne diseases are dangerous for human health of living slum population Sanjay Nagar Wakhar slum. The details of same were presented in Table no.4.62 and Figure no. 4.27. This shows that the water borne disease with age group wise total affected population. Out of the total population 43.28% population are affected due to various water borne diseases in Sanjay Nagar Wakhar slum.

**Table No.4.62:** Status of Water borne diseases in Sanjay Nagar Wakhar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	02	0.43	03	0.65	05	1.08	07	1.52	17	3.68
Typhoid	02	0.43	02	0.43	04	0.87	03	0.65	11	2.38
Cholera	02	0.43	03	0.65	06	1.30	04	0.87	15	3.25
Jaundice	15	3.25	16	3.46	12	2.60	18	3.90	61	13.20
Malaria	02	0.43	02	0.43	04	0.87	02	0.43	10	2.16
Helminths	13	2.81	19	4.11	32	6.93	22	4.76	86	18.61
Total	36	7.78	45	9.74	63	13.64	56	12.12	200	43.28
Total Population is 462										

*Source: Own Sample Surveyed.*



**Figure No.4.27:** Affected Population of Water borne diseases in Sanjay Nagar Wakhar slum.



**Figure No.4.28:** Google image of Sanjay Nagar Wakhar Slum in Bhosari Region.

### **2.5.2. Gawali Nagar Slum:**

The Gawali Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

#### **2.5.2.1. Tin Bin Causing Solid Waste Pollution:**

In Gawali Nagar slum area there are about three tin bin kept at different site which has been already shown in the Figure no. 4.30. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all detail of same were presented in Table no.4.63 and Figure no. 4.30. This shows that the total area under solid waste pollution is 40sq.mts and adjacent slum huts are 28 which include the 95 population.



**Table No.4.63:** Status of Tin Bin Causing Solid Waste Pollution in Gawali Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	12	08	25	03
2	14	08	30	04
3	14	12	40	04
Total	40	28	95	11

*Source: Own Sample Surveyed.*

**2.5.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps & location of water taps is a very important aspect for sanitation in Gawali Nagar slum. There are about four drinking water taps. These are situated at different sites which are shown in Figure no. 4.30. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table no.4.64 and Figure no. 4.30. This shows 39sq.mts of marshy & Water pollution area which is adjacent to 56 slum huts, which include the 149 population.

**Table No.4.64:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Gawali Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	09	12	38	04
2	12	18	42	05
3	10	16	39	04
4	08	10	30	06
Total	39	56	149	19

*Source: Own Sample Surveyed.*

**2.5.2.3. Toilet Seats Causing solid waste & water pollution:**

The cleanness, well maintenance and regularly water supply of toilet seats are a very important aspect for sanitation in Gawali Nagar slum. There are two toilet seats. These are situated at different sites which are shown in Figure no. 4.30. The observation of daily cleanness, measurement of the spread solid waste area and water pollution around the toilet seats at the time of field visit. The details of same were presented in Table no.4.65 and Figure no. 4.30. These shows 26Sq.mts areas are Land and water polluted which is adjacent to 12 slum huts, which include the 40 population.

**Table No.4.65:** Status of Toilet Seats Causing solid waste & water pollution in Gawali Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	04	12	06
2	14	08	28	05
Total	26	12	40	11

*Source: Own Sample Surveyed.*

**2.5.2.4. Dirty water polluted stream affecting slums insanitation:**

The Gawali Nagar slum zone has 1780rmts of internal gutters, flowing openly very close to slum huts, where as it has also a natural stream at the eastern side of slum zone having a length of 180rmts. This stream has been altered with the cement concrete layer to control the monsoonal flow and to protect the slum huts from it. Even the natural status of the stream is non-perennial it has becomes a perennial due to continuous supply of gutter water from the adjacent slum zone. The nearness of dirty gutter and polluted stream causes the insanitation to almost all the slum huts, which area close to the gutter of the streams, the water delivered in the gutter will go to stream and automatically pollute the main river Pawana it is shown Figure no. 4.30 and Table no.4.66.

**Table No.4.66:** Status of Dirty water polluted stream affecting slums insanitation in Gawali Nagar slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
1780	180

*Source: Own Sample Surveyed.*

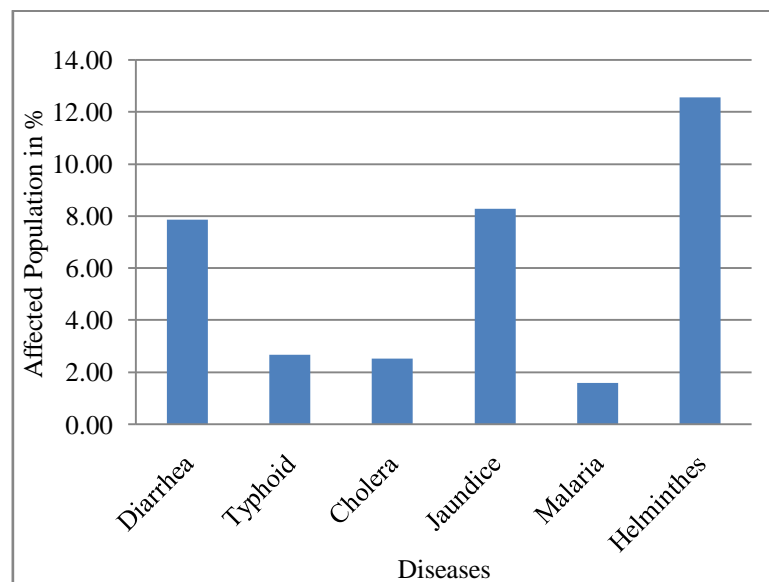
**2.5.2.5. Water borne disease reported in 2012:**

Gawali Nagar slum face various water borne diseases and environmental problem. According the analysis with table and graph to study area among water borne diseases affected on young population in between 05 to 59 year age. 12.58% population is affected by Helminths disease. Other diseases also affected on human health due to lack of latrine facilities and lack of clean drinking water. The details of same were presented in Table no.4.67 and Figure no. 4.29. This shows that the water borne diseases with age group wise total affected population. Out of the total population 35.58% population are affected due to various water borne diseases in Gawali Nagar slum.

**Table No.4.67:** Status of Water borne diseases in Gawali Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	29	1.10	82	3.11	70	2.65	27	1.02	208	7.88
Typhoid	09	0.34	18	0.68	27	1.02	17	0.64	71	2.69
Cholera	16	0.61	10	0.38	32	1.21	09	0.34	67	2.54
Jaundice	12	0.45	88	3.33	109	4.13	10	0.38	219	8.30
Malaria	05	0.19	11	0.42	17	0.64	09	0.34	42	1.59
Helminths	35	1.33	75	2.84	175	6.63	47	1.78	332	12.58
Total	106	4.02	284	10.76	430	16.29	119	4.51	939	35.58
Total Population is 2639										

*Source: Own Sample Surveyed.*



**Figure No.4.29:** Affected Population of Water borne diseases in Gawali Nagar slum.



**Figure No.4.30:** Google image of Gawali Nagar Slum in Bhosari Region.

### 2.5.3. Hirabai Landage Chawl Slum:

The Hirabai Landage Chawl slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### 2.5.3.1. Tin Bin Causing Solid Waste Pollution:

In Hirabai Landage Chawl slum area, There are about three tin bin kept at different sites. which has been already showing in the Figure no. 4.32. The daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Hirabai Landage Chawl slum areas. The measurement of spread of solid waste pollution around tin bin was pointed at the time of field work. The detail of same were presented in Table no.4.68 and Figure no. 4.32 this shows that the total area under solid waste pollution in 40sq.mts and the adjacent slum huts to it are 40 which include the 104 population.

**Table No.4.68:** Status of Tin Bin Causing Solid Waste Pollution in Hirabai Landage Chawl slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	12	18	42	04
2	14	12	34	03
3	14	10	28	04
Total	40	40	104	11

*Source: Own Sample Surveyed.*

**2.5.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect for sanitation in Hirabai Landage Chawl slum. There are about four drinking water taps. These are situated at different sites which are shown in Figure no. 4.32. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table no.4.69 and Figure no. 4.32. This shows 48sq.mts of marshy and water pollution area which is adjacent 48 slum huts, which include the 158 population.

**Table No.4.69:** Status of Drinking water taps- surrounding wet marsh places to cause water pollution in Hirabai Landage Chawl slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	10	38	06
2	10	15	49	07
3	12	13	39	05
4	14	10	32	04
Total	48	48	158	22

*Source: Own Sample Surveyed.*

**2.5.3.3. Toilet Seats Causing solid waste & water pollution:**

Daily cleanliness, well maintenance & regular water supply of toilet seats is a important aspect from the point of view of sanitation in the urban area as well as in the slum areas in Hirabai Landage Chawl slum. There are about two toilet seats kept at different locations. This toilet seats create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.32 and Table no.4.70. This shows that the total area under solid, water and Land pollution is about 26Sq.mts. & the adjacent huts to this area are 10 which include the 36 population.

**Table No.4.70:** Status of Toilet Seats Causing solid waste & water pollution in Hirabai Landage Chawl slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	06	22	05
2	14	04	14	04
Total	26	10	36	09

*Source: Own Sample Surveyed.*

**2.5.3.4. Water borne disease reported in 2012:**

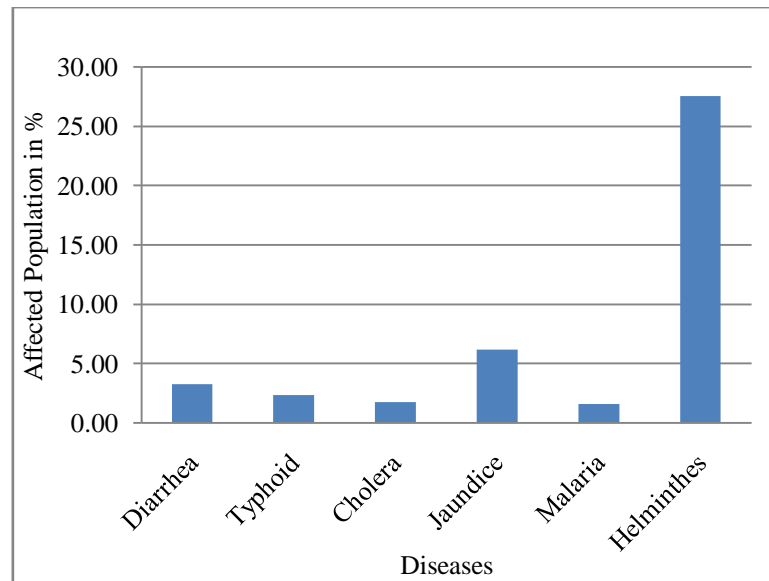
There are many problems in Hirabai Landage Chawl slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with table and graph to study area among water borne diseases affected on young population in between 05 to 59 year age. Out of the total population 42.81% population are affected by water borne diseases and near about 27.53% population is affected by Helminths disease due to polluted water. All the details of same were presented in Table no.4.71 and Figure no. 4.31 of Hirabai Landage Chawl slum.

**Table No.4.71:** Status of Water borne diseases in Hirabai Landage Chawl slum.

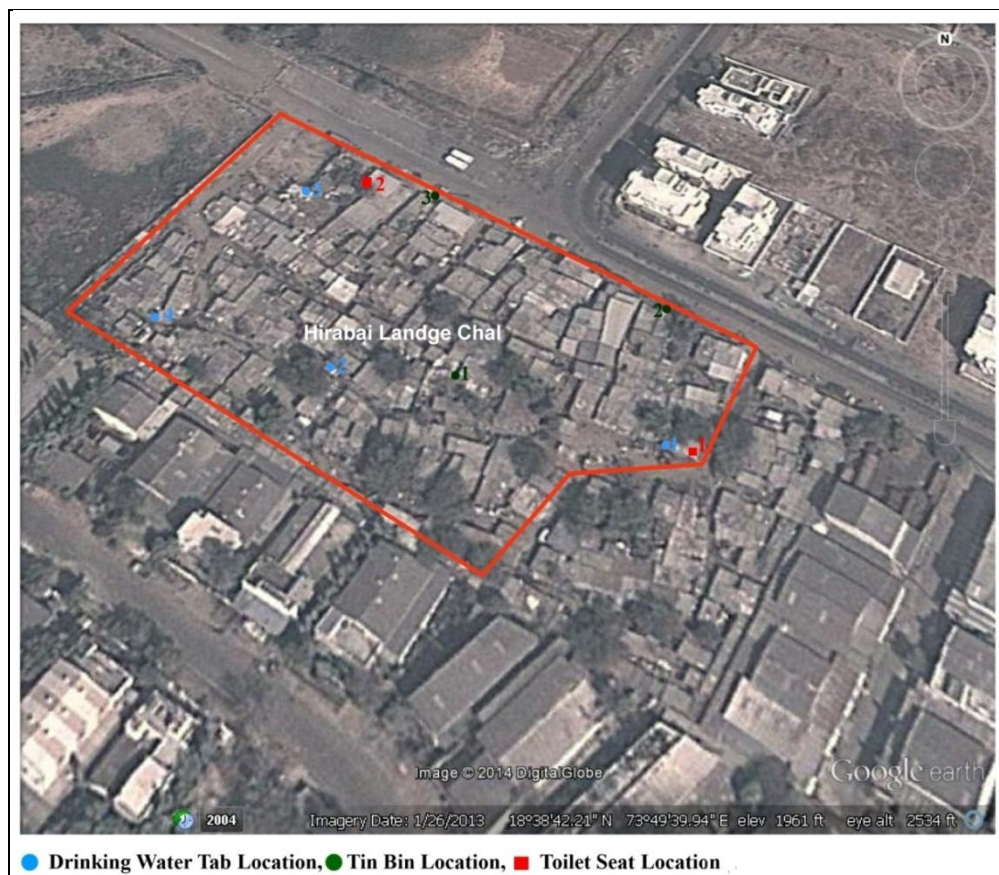
Diseases	Age Group Wise Classification								T. A. P.	T. A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	04	0.33	12	0.98	12	0.98	12	0.98	40	3.27
Typhoid	03	0.25	08	0.65	09	0.74	09	0.74	29	2.37
Cholera	02	0.16	07	0.57	10	0.82	03	0.25	22	1.80
Jaundice	05	0.41	17	1.39	32	2.61	22	1.80	76	6.21
Malaria	02	0.16	05	0.41	09	0.74	04	0.33	20	1.63
Helminths	27	2.21	78	6.37	170	13.89	62	5.05	337	27.53
Total	43	3.51	127	10.38	242	19.77	112	9.15	524	42.81
Total Population is 1224										

*Source: Own Sample Surveyed.*





**Figure No.4.31:** Affected Population of Water borne diseases in Hirabai Landage Chawl slum.



**Figure No.4.32:** Google image of Hirabai Landage Chawl Slum in Bhosari Region.

#### 2.5.4. Khandewasti Slum:

The Khandewasti slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

##### 2.5.4.1. Tin Bin Causing Solid Waste Pollution:

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Khandewasti slum areas. In Khandewasti slum area, There are about three tin bin kept at different sites which has been already shown in the Figure no. 4.34. The details of same were presented in Table no. 4.72 and Figure no. 4.34. This shows that the total area under solid waste pollution is 40sq.mts and the adjacent slum huts are 44 which include the 138 population.

**Table No.4.72:** Status of Tin Bin Causing Solid Waste Pollution in Khandewasti slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	14	18	52	04
2	12	12	42	06
3	14	14	44	04
Total	40	44	138	14

*Source: Own Sample Surveyed.*

##### 2.5.4.2. Drinking water taps- surrounding wet marshy places to cause water pollution:

In Khandewasti slum there are about four drinking water taps. These are situated at different sites which are shown in Figure no. 4.34. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps. The details of same were presented Table no.4.73 and Figure no. 4.34. This shows 44sq.mts of marshy and water pollution area which is adjacent to 64 slum huts, which include the 197 population.

**Table No.4.73:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Khandewasti slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	12	42	06
2	14	18	49	05
3	10	14	44	04
4	08	20	62	07
Total	44	64	197	22

*Source: Own Sample Surveyed.*

**2.5.4.3. Toilet Seats Causing solid waste & water pollution:**

In Khandewasti slum there are about three toilet seats kept at different site which are shown in Figure no. 4.34. At the time of field visit observation of toilet seats these are create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.34 and Table no.4.74. This shows that the total area under solid waste, water pollution and land pollution is about 34sq.mts and the adjacent slum huts to this area are 16which include the 55 population.

**Table No.4.74:** Status of Toilet Seats Causing solid waste & water pollution in Khandewasti slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	04	14	06
2	12	04	15	07
3	10	08	26	06
Total	34	16	55	19

*Source: Own Sample Surveyed.*

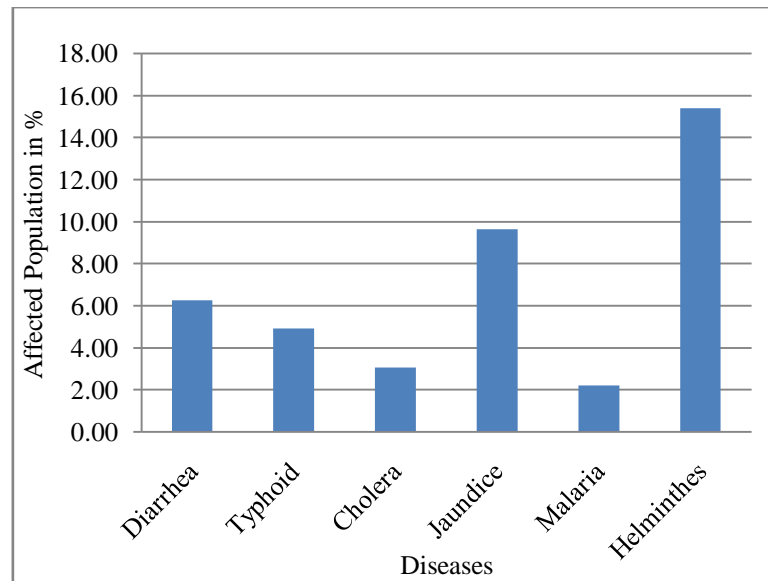
**2.5.4.4. Water borne disease reported in 2012:**

There are many problems in Khandewasti slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with Table and graphs to study area among water borne diseases are affected on children under the age group Below 5, 15 to 59 year age and as well as the above 60 age group. Near about 15.40% population is affected or illness by the Helminths Diseases due to dirty polluted water stream is flowing, lack of sanitation facilities and lack of healthy services or facilities. Also these water borne diseases are dangerous for human health of living slum population in Khandewasti slum. The details of same were presented in Table no.4.75 and Figure no. 4.33. This shows that the water borne diseases with age group wise total affected population. Out of the total population 41.46% population are affected due to water borne diseases in Khandewasti slum.

**Table No.4.75:** Status of Water borne diseases in Khandewasti slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	04	0.68	07	1.18	17	2.88	09	1.52	37	6.26
Typhoid	02	0.34	06	1.02	14	2.37	07	1.18	29	4.91
Cholera	03	0.51	04	0.68	06	1.02	05	0.85	18	3.05
Jaundice	06	1.02	19	3.21	21	3.55	11	1.86	57	9.64
Malaria	01	0.17	05	0.85	04	0.68	03	0.51	13	2.20
Helminths	13	2.20	22	3.72	27	4.57	29	4.91	91	15.40
Total	29	4.91	63	10.66	89	15.06	64	10.83	245	41.46
Total Population is 591										

*Source: Own Sample Surveyed.*



**Figure No.4.33:** Affected Population of Water borne diseases in Khandewasti slum.



**Figure No.4.34:** Google image of Khandewasti Slum in Bhosari Region.

## 2.6. Pimpri Waghere Region:

There are six slum pockets in Pimpri Waghere region it is Vitthal Nagar, Yashwant Nagar, Star Rubber Morewadi, Annasaheb Magar Nagar, Nashik Phata and Ratilal Bhagawandas. The slum wise status of Solid waste pollution, water pollution,

dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

**2.6.1. Vitthal Nagar Slum:**

The Vitthal Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

**2.6.1.1. Tin Bin Causing Solid Waste Pollution:**

In Vitthal Nagar slum area there are about four tin bin kept at different sites which has been already shows in the Figure no. 4.36. The measurement of spread of solid waste pollution around tin bin was pointed at the field work. The details of same were presented in Table no.4.76 and Figure no. 4.36. This shows that the total area under solid waste pollution is 58sq.mts and the adjacent slum huts to it are 54 which include the 181 Population.

**Table No.4.76:** Status of Tin Bin Causing Solid Waste Pollution in Vitthal Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	18	08	33	06
2	14	10	36	04
3	14	16	49	03
4	12	20	63	04
Total	58	54	181	17

*Source: Own Sample Surveyed.*

**2.6.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Vitthal Nagar slum there are about four drinking water taps it is situated at different sites which are shown in Figure no. 4.36. The daily maintenance and cleanness of drinking water pipeline, water taps point, water pollution, land pollution and measurement of the covered marshy area around the drinking water taps were observed the time of field visit in Vitthal Nagar slum. The details of same were

presented in Table no.4.77 and Figure no. 4.36. This shows 54sq.mts of marshy and polluted water area which is adjacent to 56 slum huts, which include the 179 population.

**Table No.4.77:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Vitthal Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	18	49	04
2	16	20	68	06
3	10	10	34	04
4	14	08	28	06
Total	54	56	179	20

*Source: Own Sample Surveyed.*

**2.6.1.3. Toilet Seats Causing solid waste & water pollution:**

The location, daily cleanness and regular water supply of toilet seats is an important aspect for the point of view of sanitation in the urban area as well slum area in Vitthal Nagar slum. There are about two toilet seats it is situated at the different sites. This toilet seats create the solid waste, water pollution, land pollution and also pollution spread around toilet seats. The all details regarding this toilet seats and its pollution shown in Figure no. 4.36 and Table no.4.78. This shows 20sq.mts of solid waste, water pollution and land pollution area. This is adjacent to 18 slum huts, which includes the 62 population.

**Table No.4.78:** Status of Toilet Seats Causing solid waste & water pollution in Vitthal Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	08	08	28	04
2	12	10	34	06
Total	20	18	62	10

*Source: Own Sample Surveyed.*

#### 2.6.1.4. Dirty water polluted stream affecting slums insanitation:

The Vitthal Nagar slum area has 3625rmts of internal gutter flowing openly very close to slum huts. Where as it has also a big natural stream (*Nala*) at eastern side of the slum zone having length 192rmts. This stream has been altered with the cement concrete layer to control the monsoonal flow and to protect the slum huts from it. Even the flowing status of the stream is perennial due to continuously supply of gutter water from the adjacent slum zone. The nearness of dirty gutter and polluted stream causes the insanitation to almost all the slum huts, which area close to gutter of the streams. The water delivered in gutter will go to stream and automatically pollute the main River Pawana. It is shown the Figure no. 4.36 and Table no.4.79.

**Table No.4.79:** Status of Dirty water polluted stream affecting slums insanitation in Vitthal Nagar slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
3625	192

*Source: Own Sample Surveyed.*

#### 2.6.1.5. Water borne disease reported in 2012:

In Vitthal Nagar slum emergence environmental problems like Solid waste pollution, land pollution, water pollution and air pollution due to lack of latrine facilities, poor sanitary condition and poor quality of water leads to various water borne diseases. According to the analysis with table and graph to study area among water borne diseases are affected on child and young and population in Vitthal Nagar slum. near about 27.96% population are affected or illness by the Helminths disease due to dirty polluted water stream are flowing and lack of maintenance of drinking water pipe lines. Also these water borne diseases are dangerous for human health of

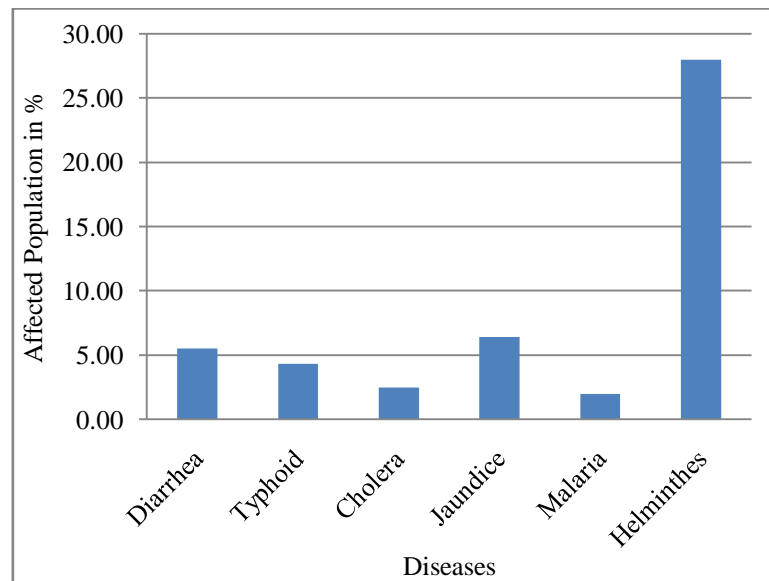


living slum population Vitthal Nagar slum. The details of same were presented in Table no.4.80 and Figure no. 4.35. This shows that the water borne disease with age group wise total affected population. Out of the total population 48.72% population are affected due to various water borne diseases in Vitthal Nagar slum.

**Table No.4.80:** Status of Water borne diseases in Vitthal Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	62	0.90	72	1.04	192	2.78	54	0.78	380	5.51
Typhoid	20	0.29	74	1.07	107	1.55	98	1.42	299	4.34
Cholera	22	0.32	29	0.42	77	1.12	45	0.65	173	2.51
Jaundice	77	1.12	82	1.19	220	3.19	62	0.90	441	6.40
Malaria	10	0.15	22	0.32	87	1.26	19	0.28	138	2.00
Helminths	280	4.06	530	7.69	920	13.34	198	2.87	1928	27.96
Total	471	6.83	809	11.73	1603	23.25	476	6.90	3359	48.72
Total Population is 6895										

*Source: Own Sample Surveyed.*



**Figure No.4.35:** Affected Population of Water borne diseases in Vitthal Nagar slum.



**Figure No.4.36:** Google image of Vitthal Nagar Slum in Pimpri Waghere Region.

### **2.6.2. Yashwant Nagar Slum:**

The Jay Malhar Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### **2.6.2.1. Tin Bin Causing Solid Waste Pollution:**

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the urban area as well as in the slum areas. In Yashwant Nagar slum area, there are about two tin bin Kept at different sites which has been already shown in the Figure no. 4.38 The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no. 4.81 and Figure no. 4.38. This shows that the total area under solid waste pollution is 22sq.mts and the adjacent slum huts to it are 16which include the 50 population.

**Table No.4.81:** Status of Tin Bin Causing Solid Waste Pollution in Yashwant Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	10	06	18	02
2	12	10	32	04
Total	22	16	50	06

*Source: Own Sample Surveyed.*

**2.6.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Yashwant Nagar slum there are three about drinking water taps it is situated at different sites. which are shown in Figure no. 4.38 At the time of field work observation of daily cleanness and maintenance of drinking water taps points, drinking water pipeline, covered marshy area and polluted water around the drinking water taps. All these details of same were shown in Table no.4.82 and Figure no. 4.38. This shows that the total area under marshy, water pollution and land pollution is 36sq.mts and the adjacent slum huts to it are 36 which include the 110 population.

**Table No.4.82:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Yashwant Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	08	28	06
2	10	12	34	05
3	14	16	48	04
Total	36	36	110	15

*Source: Own Sample Surveyed.*

**2.6.2.3. Toilet Seats Causing solid waste & water pollution:**

The regular water supply and well maintenance of toilet seats to protect the slum huts from solid waste, water pollution and land pollution. There are about two toilet seats situated at the different sites in Yashwant Nagar slum. It is shown in Figure no. 4.38. This toilet seats create water and land pollution it spread around the toilet seats. The details of same were shown in Figure no. 4.38 and Table no. 4.83. These shows that the total area under solid waste, water pollution and land pollution is about 32sq.mts and the adjacent slum huts to this area are 20, which include the 82 population.

**Table No.4.83:** Status of Toilet Seats Causing solid waste & water pollution in Yashwant Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	14	08	34	05
2	18	12	48	06
Total	32	20	82	11

*Source: Own Sample Surveyed.*

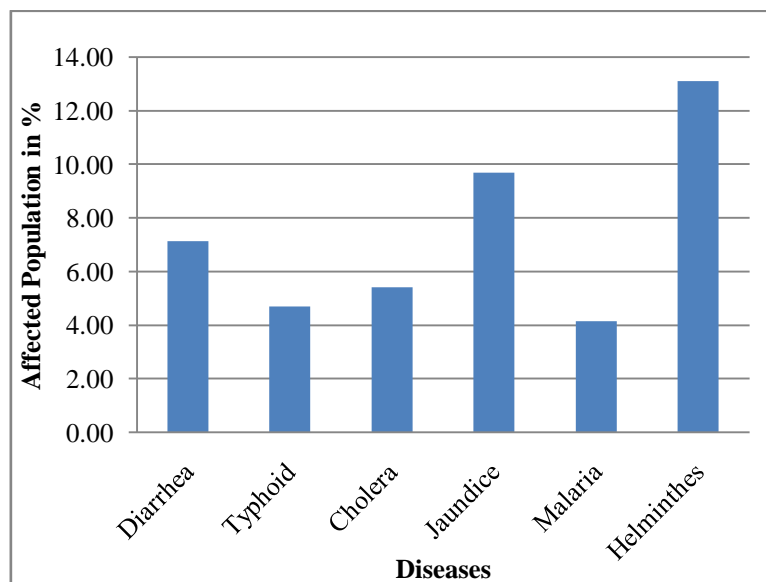
**2.6.2.4. Water borne disease reported in 2012:**

Yashwant Nagar slum face various water borne diseases and environmental problem. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age. Near about 13.11% population are affected by the Helminths disease. Other diseases also affected on human health due to lack of latrine facilities and lack of clean drinking water. The details of same were presented in Table no.4.84 and Figure no. 4.37. This shows that the water borne diseases with age group wise total affected population. Out of the total population 44.16% population are affected due to various water borne diseases in Yashwant Nagar slum.

**Table No.4.84:** Status of Water borne diseases in Yashwant Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	06	0.85	05	0.71	32	4.56	07	1.00	50	7.12
Typhoid	04	0.57	07	1.00	19	2.71	03	0.43	33	4.70
Cholera	03	0.43	04	0.57	27	3.85	04	0.57	38	5.41
Jaundice	12	1.71	17	2.42	36	5.13	03	0.43	68	9.69
Malaria	02	0.28	04	0.57	19	2.71	04	0.57	29	4.13
Helminths	09	1.28	27	3.85	37	5.27	19	2.71	92	13.11
Total	36	5.13	64	9.12	170	24.22	40	5.70	310	44.16
Total Population is 702										

*Source: Own Sample Surveyed.*



**Figure No.4.37:** Affected Population of Water borne diseases in Yashwant Nagar slum.



**Figure No.4.38:** Google image of Yashwanti Nagar Slum in Pimpri Waghere Region.

### 2.6.3. Star Rubber Morewadi Slum:

The Star Rubber Morewadi slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

#### 2.6.3.1. Tin Bin Causing Solid Waste Pollution:

In Star Rubber Morewadi slum area there are about three tin bin kept at different sites which has been already shown in the Figure no. 4.40. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all detail of same was presented in Table no.4.85 and Figure no. 4.40. This shows that the total area under solid waste pollution is 52sq.mts and adjacent slum huts are 39 which include the 126 population.

**Table No.4.85:** Status of Tin Bin Causing Solid Waste Pollution in Star Rubber Morewadi slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	18	14	40	06
2	18	10	38	04
3	16	15	48	03
Total	52	39	126	13

*Source: Own Sample Surveyed.*

**2.6.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect from the point of view of sanitation in the urban area as well as in the slum area. In Star Rubber Morewadi slum there are about five drinking water taps situated at different sites which has been already shown in the Figure no. 4.40. The observation regarding the daily cleanness and maintenance of drinking water pipeline, water taps point, water pollution and measurement of the covered marshy area around the drinking water taps were observed at the time of field work in Star Rubber Morewadi slum. The details of same were presented in Table no. 4.86 and Figure no. 4.40. This shows 48sq.mts of marshy and water pollution area which is adjacent 74 slum huts, which include the 266 population.

**Table No.4.86:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Star Rubber Morewadi slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	08	12	48	05
2	12	14	54	04
3	10	20	68	03
4	10	18	62	04
5	08	10	34	05
Total	48	74	266	21

*Source: Own Sample Surveyed.*

**2.6.3.3. Toilet Seats Causing solid waste & water pollution:**

The cleanness, well maintenance and regularly water supply of toilet seats are a very important aspect for sanitation in Star Rubber Morewadi slum. There are two toilet seats. These are situated at different sites which are shown in Figure no. 4.40. The observation of daily cleanness, measurement of the spread solid waste area and water pollution around the toilet seats at the time of field visit. The details of same were presented in Table no. 4.87 and Figure no. 4.40. These shows 24Sq.mts areas are Land and water polluted which is adjacent to 24 slum huts, which include the 84 population.

**Table No.4.87:** Status of Toilet Seats Causing solid waste & water pollution Star Rubber Morewadi slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	14	10	32	07
2	10	14	52	06
Total	24	24	84	13

*Source: Own Sample Surveyed.*



#### 2.6.3.4. Dirty water polluted stream affecting slums insanitation:

The Star Rubber Morewadi slum zone has 850rmts of internal gutters, flowing openly very close to slum huts, where as it has also a natural stream at the Southern and Central side of slum zone having a length of 287rmts This stream has been altered with the cement concrete layer to control the monsoonal flow and to protect the slum huts from it. Even the natural status of the stream is non-perennial it has becomes a perennial due to continuous supply of gutter water from the adjacent slum zone. The nearness of dirty gutter and polluted stream causes the insanitation to almost all the slum huts, which area close to the gutter of the streams, the water delivered in the gutter will go to stream and automatically pollute the main river Pawana it is shown Figure no. 4.40 and Table no. 4.88.

**Table No.4.88:** Status of Dirty water polluted stream affecting slums insanitation in Star Rubber Morewadi slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
850	287

*Source: Own Sample Surveyed.*

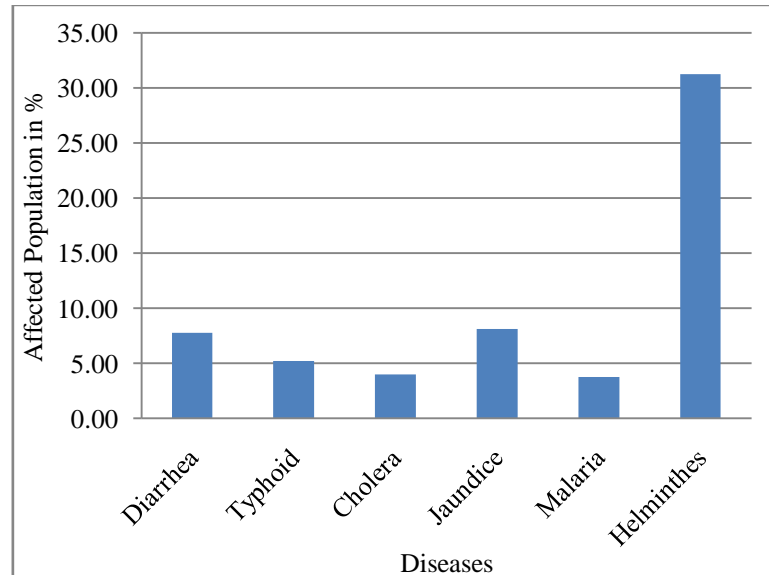
#### 2.6.3.5. Water borne disease reported in 2012:

There are many problems in Star Rubber Morewadi slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age. In Star Rubber Morewadi slum out of the total population 60.12% population are affected by water borne diseases near about 31.24% population is affected by Helminths disease due to polluted water. All the details of same were presented in Table no.4.89 and Figure no. 4.39 of Star Rubber Morewadi slum.

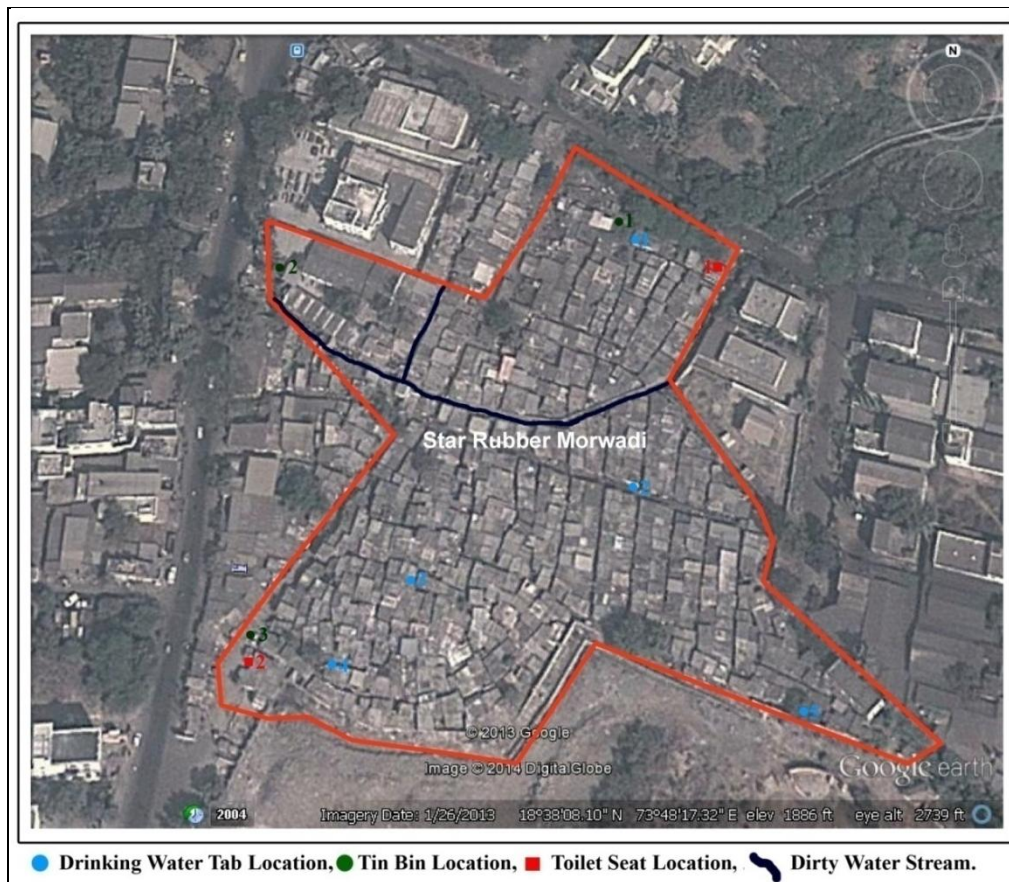
**Table No.4.89:** Status of Water borne diseases in Star Rubber Morewadi slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	74	2.00	37	1.00	98	2.65	79	2.14	288	7.80
Typhoid	26	0.70	42	1.14	97	2.63	27	0.73	192	5.20
Cholera	16	0.43	22	0.60	82	2.22	27	0.73	147	3.98
Jaundice	28	0.76	39	1.06	179	4.85	54	1.46	300	8.12
Malaria	04	0.11	12	0.32	107	2.90	17	0.46	140	3.79
Helminths	72	1.95	120	3.25	742	20.09	220	5.96	1154	31.24
Total	220	5.96	272	7.36	1305	35.33	424	11.48	2221	60.12
Total Population is 3694										

*Source: Own Sample Surveyed.*



**Figure No.4.39:** Affected Population of Water borne diseases in Star Rubber Morewadi slum.



**Figure No.4.40:** Google image of Star Rubber Morewadi Slum in Pimpri Waghere Region.

#### **2.6.4. Annasaheb Magar Nagar Slum:**

The Annasaheb Magar Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

##### **2.6.4.1. Tin Bin Causing Solid Waste Pollution:**

In Annasaheb Magar Nagar slum area there are about three tin bin kept at different site and its measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no.4.90 and Figure no. 4.42. This shows that the total area under solid waste pollution is 52sq.mts and adjacent slum huts are 40 which include the 136 population.

**Table No.4.90:** Status of Tin Bin Causing Solid Waste Pollution in Annasaheb Magar Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	16	14	48	06
2	18	16	54	06
3	18	10	34	04
Total	52	40	136	16

*Source: Own Sample Surveyed.*

**2.6.4.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

Daily cleanness, well maintenance and regular water supply of drinking water taps is an important aspect for sanitation in Annasaheb Magar Nagar slum. There are about four drinking water taps situated at different sites which are shown in Figure no. 4.42. At the time of field visit observation of drinking water pipeline, water taps point, water pollution, land pollution and measurement of the covered marshy area around the drinking water taps. The details of same were presented in Table no.4.91 and Figure no. 4.42. This shows that the total area under marshy and water pollution is 48sq.mts and adjacent slum huts to it are 64 which include the 216 population.

**Table No.4.91:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Annasaheb Magar Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	16	52	06
2	10	14	48	07
3	14	16	55	08
4	12	18	61	05
Total	48	64	216	26

*Source: Own Sample Surveyed.*

**2.6.4.3. Toilet Seats Causing solid waste & water pollution:**

Daily cleanliness, well maintenance & regular water supply of toilet seats is a important aspect from the point of view of sanitation in the urban area as well as in the slum areas in Annasaheb Magar Nagar slum. There are about four toilet seats kept at different locations. This toilet seats create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.42 and Table no.4.92. This shows that the total area under solid, water and Land pollution is about 54Sq.mts. & the adjacent huts to this area are 38 which include the 140 population.

**Table No.4.92:** Status of Toilet Seats Causing solid waste & water pollution in Annasaheb Magar Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	10	34	06
2	10	08	28	06
3	18	08	30	05
4	14	12	48	04
Total	54	38	140	21

*Source: Own Sample Surveyed.*

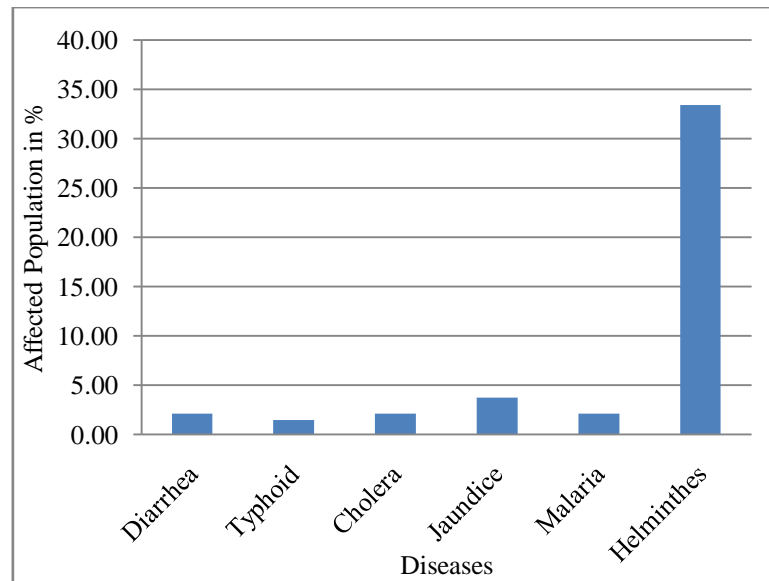
**2.6.4.4. Water borne disease reported in 2012:**

There are many problems in Annasaheb Magar Nagar slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with Table and graphs to study area among water borne diseases are affected on child between 5 to 14 year age and young population in between 15 to 59 year age. Near about 33.40% population in Annasaheb Magar Nagar slum Affected or Illness by the Helminths Diseases due to dirty polluted water stream are flowing, lack of sanitation facilities and lack of healthy services or facilities. Also these water borne diseases are dangerous for human health of living slum population in Annasaheb Magar Nagar slum. The details of same were presented in Table no. 4.93 and Figure no. 4.41. This shows that the water borne diseases with age group wise total affected population. Out of the total population 44.82% population are affected due to water borne diseases in Annasaheb Magar Nagar slum.

**Table No.4.93:** Status of Water borne diseases in Annasaheb Magar Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	02	0.14	09	0.63	15	1.04	04	0.28	30	2.09
Typhoid	02	0.14	03	0.21	14	0.97	02	0.14	21	1.46
Cholera	03	0.21	07	0.49	17	1.18	03	0.21	30	2.09
Jaundice	05	0.35	17	1.18	19	1.32	12	0.84	53	3.69
Malaria	02	0.14	04	0.28	17	1.18	07	0.49	30	2.09
Helminths	47	3.27	147	10.23	177	12.32	109	7.59	480	33.40
Total	61	4.24	187	13.01	259	18.02	137	9.53	644	44.82
Total Population is 1437										

*Source: Own Sample Surveyed.*



**Figure No.4.41:** Affected Population of Water borne diseases in Annasaheb Magar Nagar slum.



**Figure No.4.42:** Google image of Annasaheb Magar Nagar Slum in Pimpri Waghere Region.

**2.6.5. Nashik Phata Slum:**

The Nashik Phata slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps, nearness of Toilet seats and dirty water stream. This can deteriorate the slum environment and affect the human health.

**2.6.5.1. Tin Bin Causing Solid Waste Pollution:**

In Nashik Phata slum area there are about three tin bin kept at different site which has been already shown in the Figure no. 4.44 The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all detail of same was presented in Table no.4.94 and Figure no. 4.44. This shows that the total area under solid waste pollution is 30sq.mts and adjacent slum huts are 28 which include the 100 population.

**Table No.4.94:** Status of Tin Bin Causing Solid Waste Pollution in Nashik Phata slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	08	08	30	04
2	10	06	22	04
3	12	14	48	06
Total	30	28	100	14

*Source: Own Sample Surveyed.*

**2.6.5.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps & location of water taps is a very important aspect for sanitation in Nashik Phata slum. There are about five drinking water taps. These are situated at different sites which are shown in Figure no. 4.44. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table no. 4.95 and Figure no. 4.44. This shows



70sq.mts of marshy & Water pollution area which is adjacent to 74 slum huts, which include the 226 population.

**Table No. 4.95:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Nashik Phata slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	16	12	38	06
2	18	14	42	07
3	14	20	60	05
4	10	18	54	05
5	12	10	32	04
Total	70	74	226	27

*Source: Own Sample Surveyed.*

**2.6.5.3. Toilet Seats Causing solid waste & water pollution:**

In Nashik Phata slum there are about two toilet seats kept at different site which are shown in Figure no. 4.44. At the time of field visit observation of toilet seats these are create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no. 4.44 and Table no.4.96. This shows that the total area under solid waste, water pollution and land pollution is about 26sq.mts and the adjacent slum huts to this area are 22 which include the 70 population.

**Table No. 4.96:** Status of Toilet Seats Causing solid waste & water pollution in Nashik Phata slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	10	32	06
2	14	12	38	05
Total	26	22	70	11

*Source: Own Sample Surveyed.*

**2.6.5.4. Dirty water polluted stream affecting slums insanitation:**

In Nashik Phata slum area has 620rmts of internal gutters flowing openly very close to slum huts where as it has also a natural stream at the western side of slum zone having length 145rmts. This stream has been altered with cement concrete layer to control the monsoon flow and to protect the slum from it. This stream is non-perennial it has become a perennial due to continuous supply of gutter water from the adjacent slum zone. The nearness of dirty gutter and polluted stream causes the insanitation to almost all the slum huts, which are close to the gutter of the streams, the water delivered in the gutter will go to stream and automatically pollute the main rive Pawana it is shown Figure no. 4.44.and Table no.4.97.

**Table No.4.97:** Status of Dirty water polluted stream affecting slums insanitation in Nashik Phata slum.

Total Gutters rmts	Lined Stream Polluted Drainage Water in rmts.
620	145

*Source: Own Sample Surveyed.*

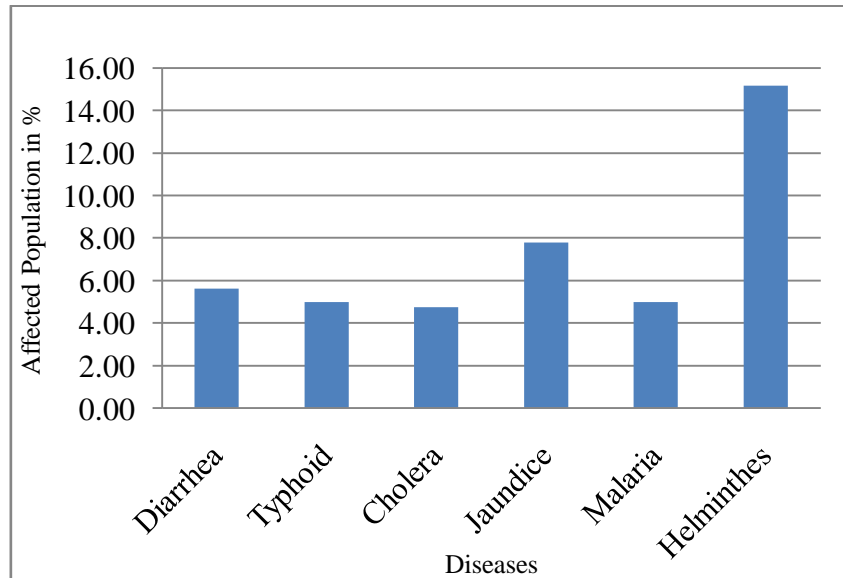
**2.6.5.5. Water borne disease reported in 2012:**

In Nashik Phata slum emergence environmental problems like Solid waste pollution, land pollution, water pollution and air pollution due to lack of latrine facilities, poor sanitary condition and poor quality of water leads to various water borne diseases. According to the analysis with table and graph to study area among water borne diseases are affected on child and young population in Nashik Phata slum. 15.18% population is affected or illness by the Helminths disease due to dirty polluted water stream is flowing and lack of maintenance of drinking water pipe lines. Also these water borne diseases are dangerous for human health of living slum population Nashik Phata slum. The details of same were presented in Table no.4.98 and Figure no. 4.43.This shows that the water borne disease with age group wise total affected population. Out of the total population 43.38% population are affected due to various water borne diseases in Nashik Phata slum.

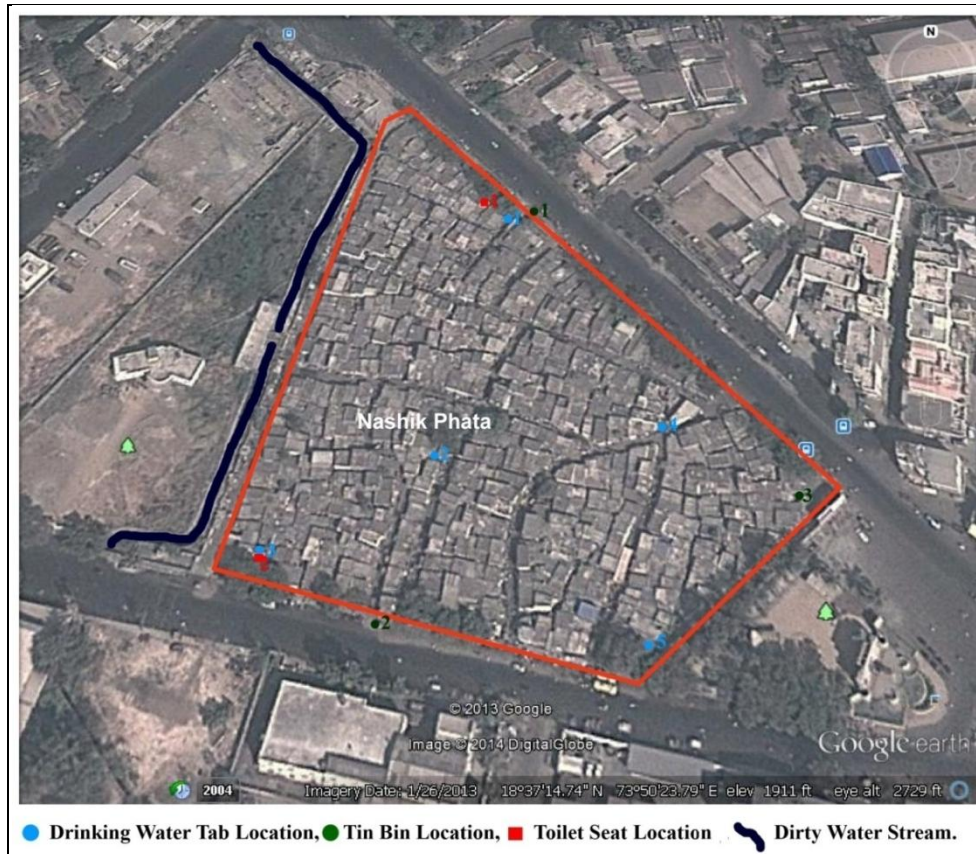
**Table No.4.98:** Status of Water borne diseases in Nashik Phata slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	04	0.87	03	0.65	17	3.69	02	0.43	26	5.64
Typhoid	05	1.08	04	0.87	13	2.82	01	0.22	23	4.99
Cholera	04	0.87	03	0.65	12	2.60	03	0.65	22	4.77
Jaundice	02	0.43	08	1.74	19	4.12	07	1.52	36	7.81
Malaria	02	0.43	02	0.43	16	3.47	03	0.65	23	4.99
Helminths	12	2.60	27	5.86	17	3.69	14	3.04	70	15.18
Total	29	6.29	47	10.20	94	20.39	30	6.51	200	43.38
Total Population is 461										

*Source: Own Sample Surveyed.*



**Figure No.4.43:** Affected Population of Water borne diseases in Nashik Phata slum.



**Figure No.4.44:** Google image of Nashik Phata Slum in Pimpri Waghere Region.

### **2.6.6. Ratilal Bhagwandas Slum:**

The Ratilal Bhagwandas slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### **2.6.6.1. Tin Bin Causing Solid Waste Pollution:**

In Ratilal Bhagwandas slum area, There are about two tin bin kept at different sites. Which has been already showing in the Figure no. 4.46. The daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Ratila Bhagwandas slum areas. The measurement of spread of solid waste pollution around tin bin was pointed at the time of field work. The details of same were presented in Table no.4.99 and Figure no. 4.46. This shows that the total area under solid waste pollution in 28sq.mts and the adjacent slum huts to it are 14 which include the 50 population.

**Table No.4.99:** Status of Tin Bin Causing Solid Waste Pollution in Ratilal Bhagwandas Slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	18	06	20	04
2	10	08	30	03
Total	28	14	50	07

*Source: Own Sample Surveyed.*

**2.6.6.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect for sanitation in Ratilal Bhagwandas slum. There are about four drinking water taps. These are situated at different sites which are shown in Figure no. 4.46. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking water taps were observed the time of field work. The details of same were presented in Table no. 4.100 and Figure no. 4.46. This shows 52sq.mts of marshy and water pollution area which is adjacent 70slum huts, which include the 231 population.

**Table No. 4.100:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Ratilal Bhagwandas slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	16	49	08
2	10	20	64	07
3	16	14	46	06
4	12	20	72	05
Total	52	70	231	26

*Source: Own Sample Surveyed.*

**2.6.6.3. Toilet Seats Causing solid waste & water pollution:**

The location, daily cleanness and regular water supply of toilet seats is an important aspect for the point of view of sanitation in the urban area as well slum area in Ratilal Bhagwandas slum. There are about two toilet seats it is situated at the different sites. This toilet seats create the solid waste, water pollution, land pollution and also pollution spread around toilet seats. The all details regarding this toilet seats and its pollution shown in Figure no. 4.46 and Table no.4.101. This shows 26sq.mts of solid waste, water pollution and land pollution area. This is adjacent to 14 slum huts, which includes the 51 population.

**Table No. 4.101:** Status of Toilet Seats Causing solid waste & water pollution in Ratilal Bhagwandas slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	14	08	31	05
2	12	06	20	06
Total	26	14	51	11

*Source: Own Sample Surveyed.*

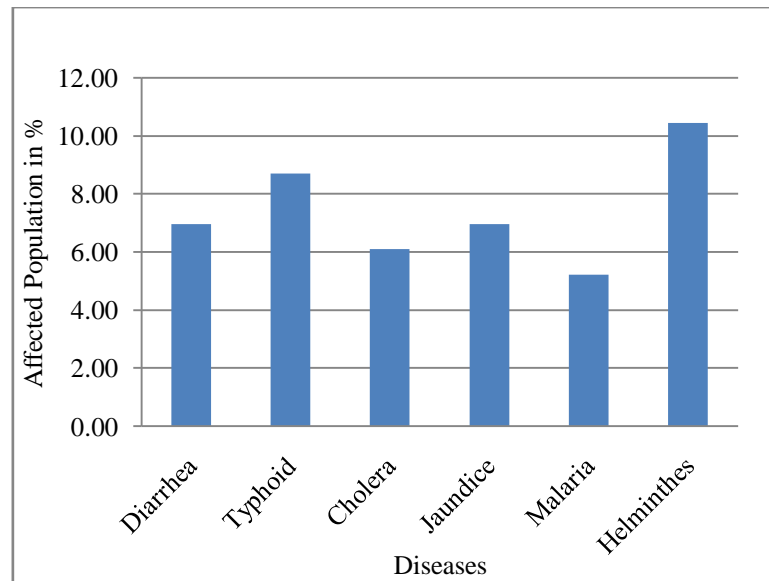
**2.6.6.4. Water borne disease reported in 2012:**

Ratilal Bhagwandas slum face various water borne diseases and environmental problem. According the analysis with table and graph to study area among water borne diseases affected on child, young and old population. Near about 10.43% population are affected by Helminths disease in this slum. Other diseases also affected on human health due to lack of latrine facilities and lack of clean drinking water. The details of same were presented in Table no.4.102 and Figure no. 4.45. This shows that the water borne diseases with age group wise total affected population. Out of the total population 44.35% population are affected due to various water borne diseases in Ratilal Bhagwandas slum.

**Table No.4.102:** Status of Water borne diseases in Ratilal Bhagwandas slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	02	1.74	02	1.74	02	1.74	02	1.74	08	6.96
Typhoid	02	1.74	03	2.61	03	2.61	02	1.74	10	8.70
Cholera	02	1.74	02	1.74	01	0.87	02	1.74	07	6.09
Jaundice	02	1.74	02	1.74	02	1.74	02	1.74	08	6.96
Malaria	02	1.74	01	0.87	02	1.74	01	0.87	06	5.22
Helminths	04	3.48	02	1.74	03	2.61	03	2.61	12	10.43
Total	14	12.18	12	10.44	13	11.31	12	10.43	51	44.35
Total Population is 115										

*Source: Own Sample Surveyed.*



**Figure No.4.45:** Affected Population of Water borne diseases in Ratilal Bhagwandas slum.



**Figure No.4.46:** Google image of Ratilal Bhagwandas Slum in Pimpri Waghere Region.



## 2.7. Dapodi Region:

There are three slum pockets in Dapodi region it is Limbore Chawl, Anandwan and Omkar Nagar slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

### 2.7.1. Limbore Chawl Slum:

The Limbore Chawl slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### 2.7.1.1. Tin Bin Causing Solid Waste Pollution:

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the Limbore Chawl slum areas. In Limbore Chawl Nagar slum area, There are about two tin bin kept at different sites which has been already shown in the Figure no. 4.48. The details of same were presented in Table no. 103 and Figure no. 4.48. This shows that the total area under solid waste pollution is 28sq.mts and the adjacent slum huts are 22 which include the 82 population.

**Table No.4.103:** Status of Tin Bin Causing Solid Waste Pollution in Limbore Chawl Slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	10	08	34	04
2	18	14	48	03
Total	28	22	82	07

*Source: Own Sample Surveyed.*

#### 2.7.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:

In Limbore Chawl slum there are about three drinking water taps. These are situated at different sites which are shown in Figure no. 4.48. The observation of daily cleanness and maintenance regarding drinking water pipeline, water taps point, measurement of the covered marshy area and water pollution around the drinking

water taps. The details of same were presented Table no.4.104 and Figure no. 4.48. This shows 44sq.mts of marshy and water pollution area which is adjacent to 40 slum huts, which include the 138 population.

**Table No. 4.104:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Limbore Chawl slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	16	14	50	04
2	14	12	40	04
3	14	14	48	05
Total	44	40	138	13

*Source: Own Sample Surveyed.*

**2.7.1.3. Toilet Seats Causing solid waste & water pollution:**

The regular water supply and well maintenance of toilet seats to protect the slum huts from solid waste, water pollution and land pollution. There are about two toilet seats situated at the different sites in Limbore Chawl slum. It is shown in Figure no. 4.48. This toilet seats create water and land pollution it spread around the toilet seats. The details of same were shown in Figure no. 4.48 and Table no.4.105. These shows that the total area under solid waste, water pollution and land pollution is about 30sq.mts and the adjacent slum huts to this area are 22, which include the 77 population.

**Table No.4.105:** Status of Toilet Seats Causing solid waste & water pollution in Limbore Chawl slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	16	08	36	06
2	14	14	41	07
Total	30	22	77	13

*Source: Own Sample Surveyed.*

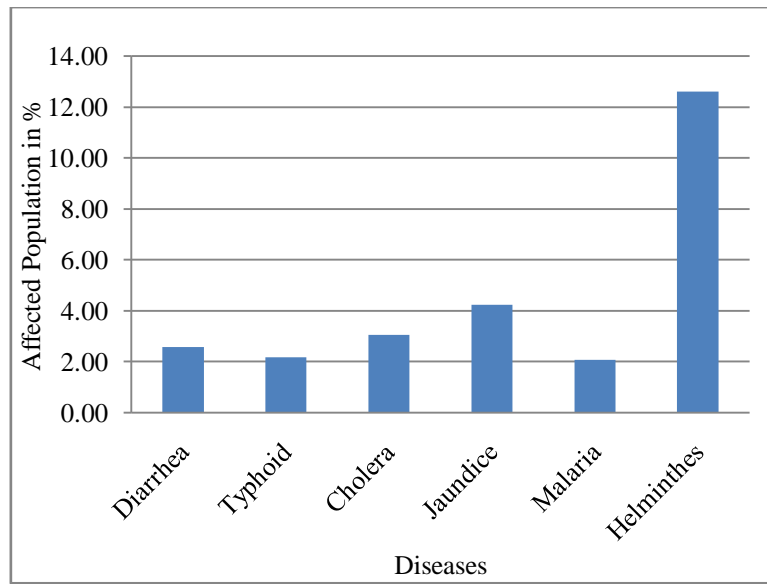
**2.7.1.4. Water borne disease reported in 2012:**

There are many problems in Limbore Chawl slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with table and graph to study area among water borne diseases affected on young population in between 05 to 59 year age and old population. In Limbore Chawl slum out of the total population 26.70% population are affected due to water borne diseases and near about 12.61% population is affected by Helminths disease due to polluted water. All the details of same were presented in Table no.4.106 and Figure no. 4.47 of Limbore Chawl slum.

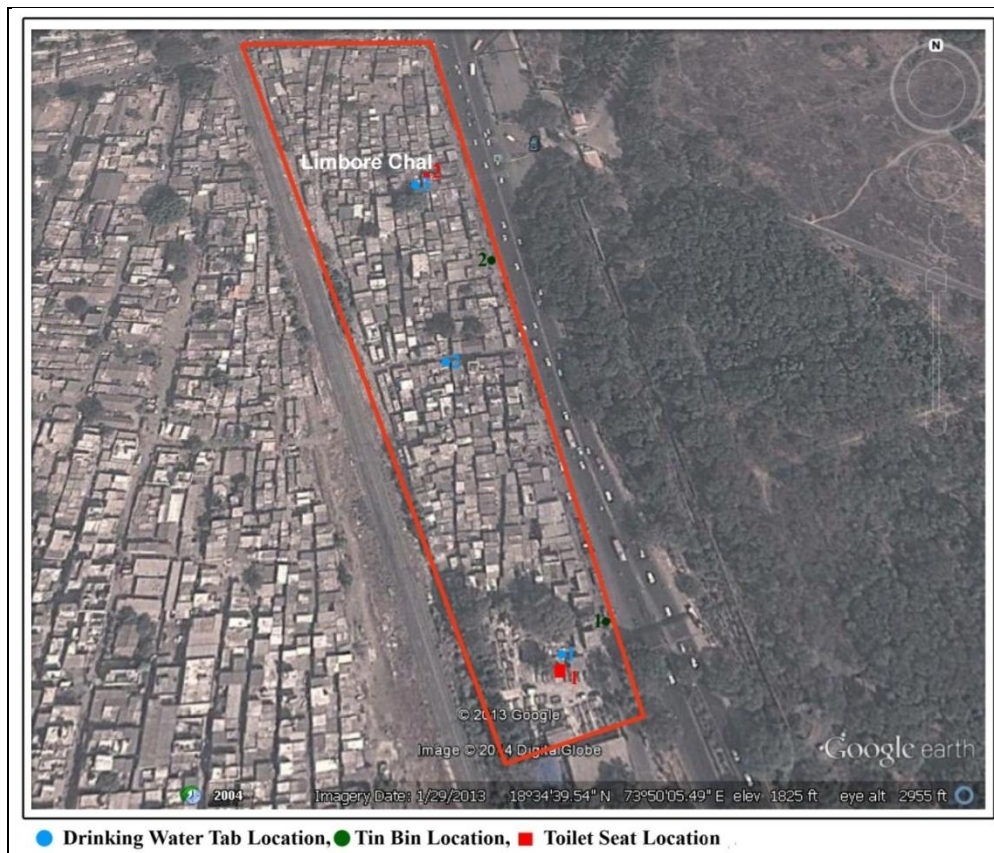
**Table No.4.106:** Status of Water borne diseases in Limbore Chawl slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	03	0.30	04	0.39	12	1.18	07	0.69	26	2.56
Typhoid	02	0.20	05	0.49	09	0.89	06	0.59	22	2.17
Cholera	07	0.69	12	1.18	07	0.69	05	0.49	31	3.05
Jaundice	09	0.89	09	0.89	12	1.18	13	1.28	43	4.24
Malaria	03	0.30	02	0.20	09	0.89	07	0.69	21	2.06
Helminths	27	2.66	28	2.76	35	3.45	38	3.74	128	12.61
Total	51	5.02	60	5.91	84	8.28	76	7.49	271	26.70
Total Population is 1015										

*Source: Own Sample Surveyed.*



**Figure No.4.47:** Affected Population of Water borne diseases in Limbore Chawl slum.



**Figure No.4.48:** Google image of Limbore Chawl Slum in Dapodi Region.

**2.7.2. Anandwan Slum:**

The Anandwan slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

**2.7.2.1. Tin Bin Causing Solid Waste Pollution:**

In Anandwan slum area there are about three tin bin kept at different sites which has been already shows in the Figure no.4.50. The measurement of spread of solid waste pollution around tin bin was pointed at the field work. The details of same were presented in Table no.4.107 and Figure no.4.50. This shows that the total area under solid waste pollution is 41sq.mts and the adjacent slum huts to it are 44 which include the 157 Population

**Table No.4.107:** Status of Tin Bin Causing Solid Waste Pollution in Anandwan Slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	12	12	42	04
2	15	14	52	05
3	14	18	63	04
Total	41	44	157	13

*Source: Own Sample Surveyed.*

**2.7.2.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Anandwan slum there are about four drinking water taps it is situated at different sites which are shown in Figure no.4.50. The daily maintenance and cleanness of drinking water pipeline, water taps point, water pollution, land pollution and measurement of the covered marshy area around the drinking water taps were observed the time of field visit in Anandwan slum. The details of same were presented in Table no. 4.108 and Figure no.4.50. This shows 50sq.Mts. of marshy and polluted water area which is adjacent to 54 slum huts, which include the 174 population.

**Table No. 4.108:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Anandwan Slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	14	44	07
2	10	12	38	08
3	10	12	40	04
4	16	16	52	05
Total	50	54	174	24

*Source: Own Sample Surveyed.*

**2.7.2.3. Toilet Seats Causing solid waste & water pollution:**

The cleanness, well maintenance and regularly water supply of toilet seats are a very important aspect for sanitation in Anandwan slum. There are two toilet seats. These are situated at different sites which are shown in Figure no.4.50. The observation of daily cleanness, measurement of the spread solid waste area and water pollution around the toilet seats at the time of field visit. The details of same were presented in Table no.4.109 and Figure no.4.50. These shows 26Sq.mts areas are Land and water polluted which is adjacent to 20 slum huts, which include the 74 population.

**Table No. 4.109:** Status of Toilet Seats Causing solid waste & water pollution in Anandwan slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	12	12	40	04
2	14	08	34	07
Total	26	20	74	11

*Source: Own Sample Surveyed.*

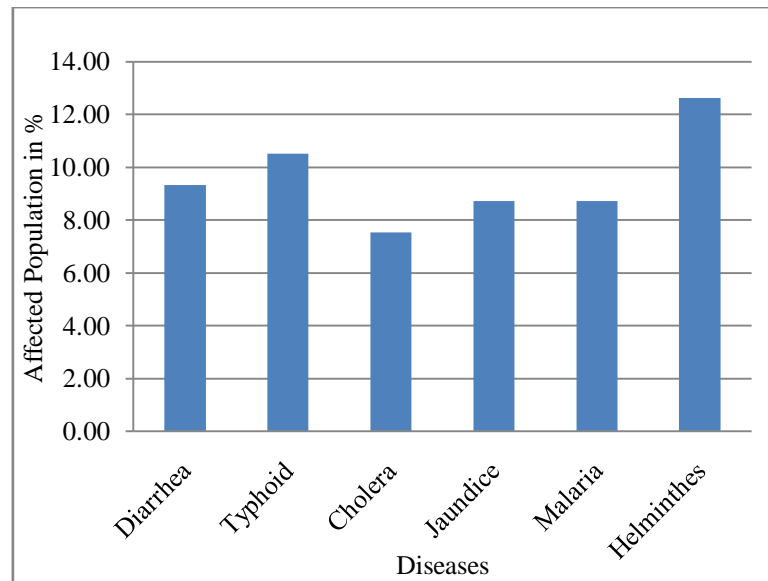
**2.7.2.4. Water borne disease reported in 2012:**

There are many problems in Anandwan slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with Table and graphs to study area among water borne diseases are affected on young population in between 15 to 59 year age and the above 60 age group. Most of the population in Anandwan slum Affected or Illness by the Helminths and Typhoid Diseases it is respectively 12.61% and 10.51% due to dirty polluted water stream are flowing, lack of sanitation facilities, stock of raw metal material and lack of health services or facilities. Also these water borne diseases are dangerous for human health of living slum population in Anandwan slum. The details of same were presented in Table no. 4.110 and Figure no.4.49. This shows that the water borne diseases with age group wise total affected population. Out of the total population 57.36% population are affected due to water borne diseases in Anandwan slum.

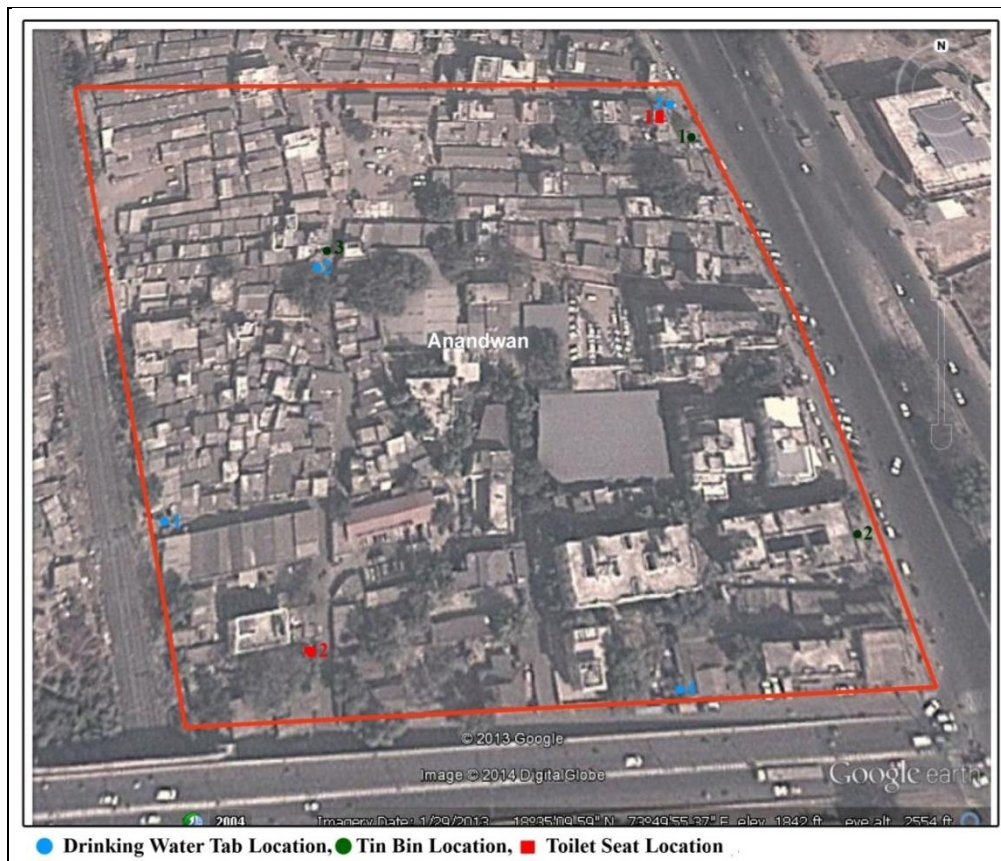
**Table No.4.110:** Status of Water borne diseases in Anandwan slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	02	0.60	04	1.20	13	3.90	12	3.60	31	9.31
Typhoid	03	0.90	02	0.60	17	5.11	13	3.90	35	10.51
Cholera	01	0.30	03	0.90	09	2.70	12	3.60	25	7.51
Jaundice	06	1.80	07	2.10	07	2.10	09	2.70	29	8.71
Malaria	02	0.60	03	0.90	16	4.80	08	2.40	29	8.71
Helminths	09	2.70	10	3.00	12	3.60	11	3.30	42	12.61
Total	23	6.91	29	8.71	74	22.22	65	19.52	191	57.36
Total Population is 333										

*Source: Own Sample Surveyed.*



**Figure No.4.49:** Affected Population of Water borne diseases in Anandwan slum.



**Figure No.4.50:** Google image of Anandwan Slum in Dapodi Region.

### 2.7.3. Omkar Nagar Slum:

The Omkar Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.



**2.7.3.1. Tin Bin Causing Solid Waste Pollution:**

The location and daily maintenance of tin bin is a very important aspect from the point of view of sanitation in the urban area as well as in the slum areas. In Omkar Nagar slum area, there are about three tin bin Kept at different sites which has been already shown in the Figure no.4.52. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no.4.111 and Figure no.4.52. This shows that the total area under solid waste pollution is 37sq.mts and the adjacent slum huts to it are 42 which include the 144 population.

**Table No.4.111:** Status of Tin Bin Causing Solid Waste Pollution in Omkar Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	18	14	48	04
2	10	12	42	05
3	09	16	54	06
Total	37	42	144	15

*Source: Own Sample Surveyed.*

**2.7.3.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

In Omkar Nagar slum there are four about drinking water taps it is situated at different sites. which are shown in Figure no. 4.52 At the time of field work observation of daily cleanness and maintenance of drinking water taps points, drinking water pipeline, covered marshy area and polluted water around the drinking water taps. All these details of same were shown in Table no.4.112 and Figure no.4.52. This shows that the total area under marshy, water pollution and land pollution is 40sq.mts and the adjacent slum huts to it are 52 which include the 164 population.

**Table No.4.112:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Omkar Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	08	12	38	04
2	10	14	44	03
3	10	14	42	04
4	12	12	40	03
Total	40	52	164	14

*Source: Own Sample Surveyed.*

**2.7.3.3. Toilet Seats Causing solid waste & water pollution:**

Daily cleanliness, well maintenance & regular water supply of toilet seats is a important aspect from the point of view of sanitation in the urban area as well as in the slum areas in Omkar Nagar slum. There are about three toilet seats kept at different locations. This toilet seats create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no.4.52 and Table no.4.113 this shows that the total area under solid, water and Land pollution is about 40Sq.mts. & the adjacent huts to this area are 36 which include the 112 population.

**Table No.4.113:** Status of Toilet Seats Causing solid waste & water pollution in Omkar Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	14	10	32	06
2	16	12	38	06
3	10	14	42	05
Total	40	36	112	17

*Source: Own Sample Surveyed.*

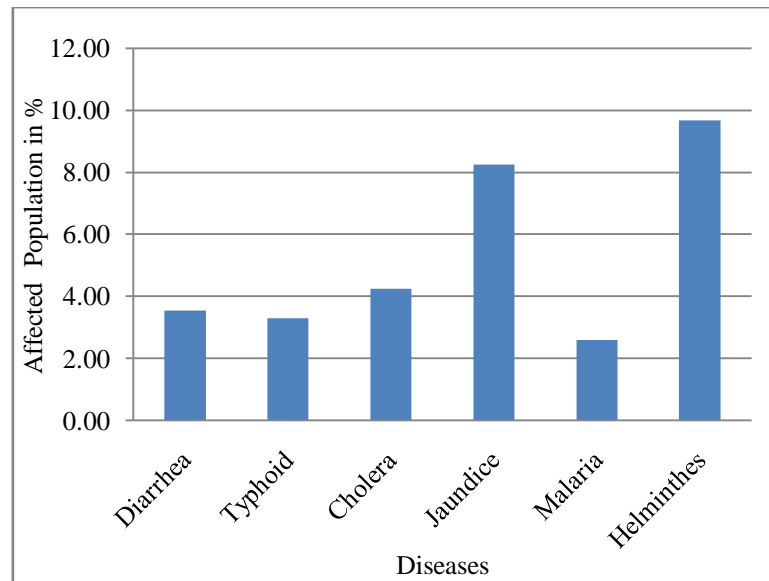
**2.7.3.4. Water borne disease reported in 2012:**

In Omkar Nagar slum emergence environmental problems like Solid waste pollution, land pollution, water pollution and air pollution due to lack of latrine facilities, poor sanitary condition and poor quality of water leads to various water borne diseases. According to the analysis with table and graph to study area among water borne diseases are affected on young population in Omkar Nagar slum. 9.67% population are affected or illness by the Helminths disease and 8.25% population illness by the Jaundice disease due to dirty polluted water stream are flowing and lack of maintenance of drinking water pipe lines. Also these water borne diseases are dangerous for human health of living slum population Omkar Nagar slum. The details of same were presented in Table no.4.114 and Figure no.4.51. This shows that the water borne disease with age group wise total affected population. Out of the total population 31.60% population are affected due to various water borne diseases in Omkar Nagar slum.

**Table No.4.114:** Status of Water borne diseases in Omkar Nagar slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	03	0.71	02	0.47	07	1.65	03	0.71	15	3.54
Typhoid	02	0.47	03	0.71	06	1.42	03	0.71	14	3.30
Cholera	03	0.71	04	0.94	09	2.12	02	0.47	18	4.25
Jaundice	07	1.65	09	2.12	13	3.07	06	1.42	35	8.25
Malaria	02	0.47	03	0.71	03	0.71	03	0.71	11	2.59
Helminths	12	2.83	09	2.12	13	3.07	07	1.65	41	9.67
Total	29	6.84	30	7.08	51	12.03	24	5.66	134	31.60
Total Population is 424										

*Source: Own Sample Surveyed.*



**Figure No.4.51:** Affected Population of Water borne diseases in Omkar Nagar slum.



**Figure No.4.52:** Google image of Omkar Nagar Slum in Dapodi Region.

**2.8. Nigadi Region:**

In Nigadi region select only one slum for study it is Sharad Nagar slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

**2.8.1. Sharad Nagar Slum:**

The Sharad Nagar slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

**2.8.1.1. Tin Bin Causing Solid Waste Pollution:**

In Sharad Nagar slum area there are about three tin bin kept at different sites which has been already shown in the Figure no.4.54. The observation regarding the daily maintenance of tin bin and measurement of spread of solid waste pollution around tin bin. These all detail of same were presented in Table no.4.115 and Figure no.4.54. This shows that the total area under solid waste pollution is 36sq.mts and adjacent slum huts are 18 which include the 56 population.

**Table No. 4.115:** Status of Tin Bin Causing Solid Waste Pollution in Sharad Nagar slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	08	06	20	03
2	12	04	12	05
3	16	08	24	06
Total	36	18	56	14

*Source: Own Sample Surveyed.*

**2.8.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

The cleanness of drinking water taps and location of water taps is a very important aspect from the point of view of sanitation in the urban area as well as in the slum area. In Sharad Nagar slum are there are about four drinking water taps

situated at different sites which has been already shown in the Figure no.4.54. The observation regarding the daily cleanness and maintenance of drinking water pipeline, water taps point, water pollution and measurement of the covered marshy area around the drinking water taps were observed at the time of field work in Sharad Nagar slum. The details of same were presented in Table no.4.116 and Figure no.4.54. This shows 54sq.mts of marshy and water pollution area which is adjacent 48 slum huts, which include the 154 population.

**Table No. 4.116:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in Sharad Nagar slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	14	12	38	04
2	16	12	40	06
3	14	14	44	07
4	10	10	32	07
Total	54	48	154	24

*Source: Own Sample Surveyed.*

**2.8.1.3. Toilet Seats Causing solid waste & water pollution:**

In Sharad Nagar slum there are about two toilet seats kept at different site which are shown in Figure no.4.54. At the time of field visit observation of toilet seats these are create solid waste and water pollution. This pollution also spread around the toilet seats. The details of same were shown in Figure no.4.54 and Table no.4.117. This shows that the total area under solid waste, water pollution and land pollution is about 26sq.mts and the adjacent slum huts to this area are 18 which include the 61 population.

**Table No. 4.117:** Status of Toilet Seats Causing solid waste & water pollution in Sharad Nagar slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	14	10	33	06
2	12	08	28	05
Total	26	18	61	11

*Source: Own Sample Surveyed.*

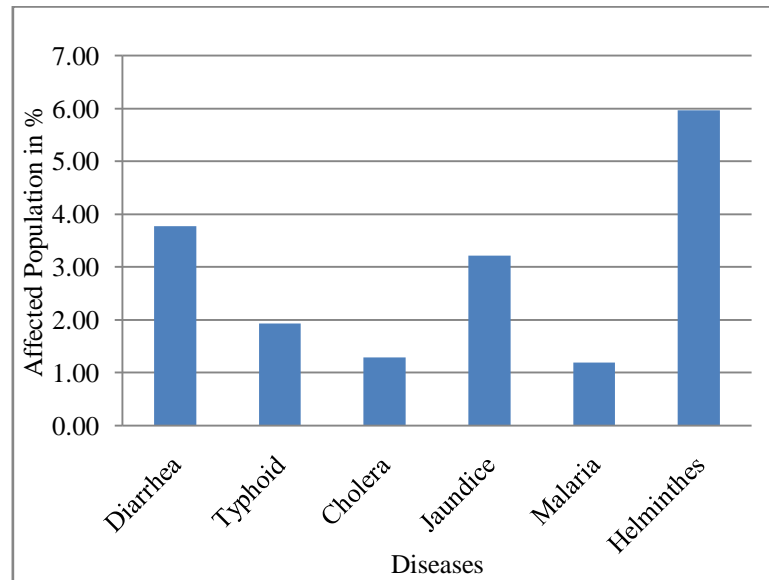
**2.8.1.4. Water borne disease reported in 2012:**

Sharad Nagar slum face various water borne diseases and environmental problem. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age. 5.97% population is affected by the Helminths disease. Other diseases also affected on human health due to lack of latrine facilities and lack of clean drinking water. The details of same were presented in Table no. 4.118 and Figure no.4.53. This shows that the water borne diseases with age group wise total affected population. Out of the total population 17.37% population are affected due to various water borne diseases in Sharad Nagar slum.

**Table No.4.118:** Status of Water borne diseases in Sharad Nagar slum.

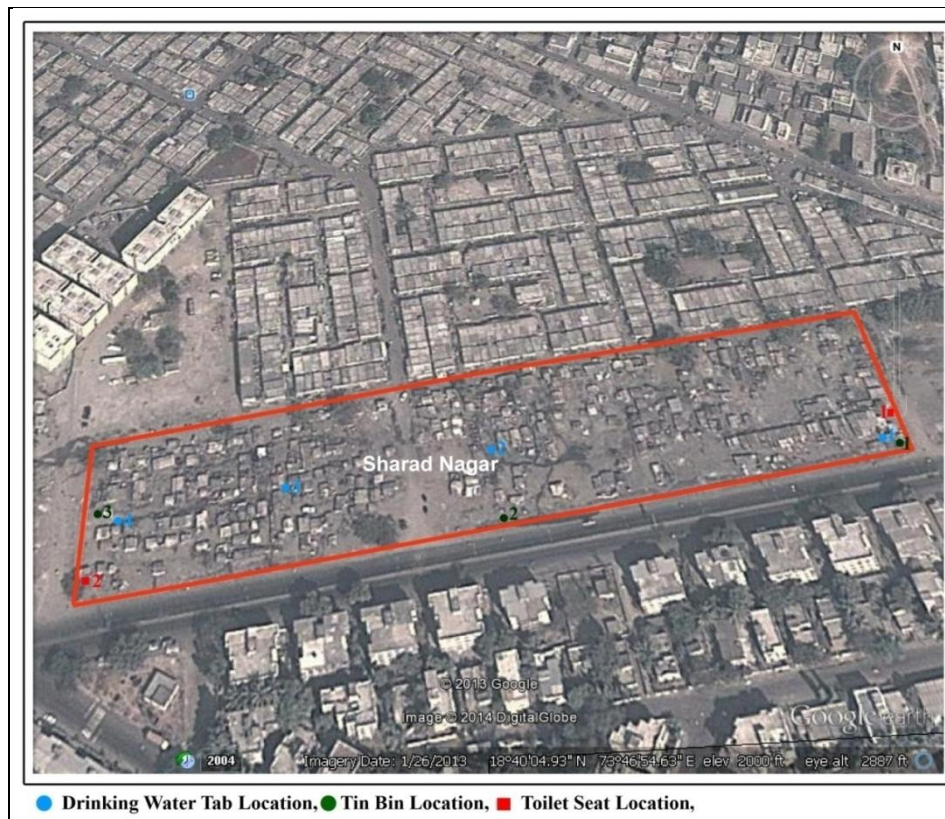
Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	03	0.28	03	0.28	26	2.39	09	0.83	41	3.77
Typhoid	04	0.37	03	0.28	12	1.10	02	0.18	21	1.93
Cholera	04	0.37	04	0.37	02	0.18	04	0.37	14	1.29
Jaundice	07	0.64	07	0.64	12	1.10	09	0.83	35	3.22
Malaria	03	0.28	04	0.37	03	0.28	03	0.28	13	1.19
Helminths	17	1.56	19	1.75	17	1.56	12	1.10	65	5.97
Total	38	3.49	40	3.68	72	6.62	39	3.58	189	17.37
Total Population is 1088										

*Source: Own Sample Surveyed.*



**Figure No.4.53:** Affected Population of Water borne diseases in Sharad Nagar slum.





**Figure No.4.54:** Google image of Sharad Nagar Slum in Nigadi Region.

## **2.9. Kiwale Region:**

In Kiwale region select only one slum for study it is M. B. Camp slum. The slum wise status of Solid waste pollution, water pollution, dirty polluted stream affecting slums insanitation and associated health problems. The details explain as following ways.

### **2.9.1. M. B. Camp Slum:**

The M.B. Camp slum is also facing the environmental problems like solid waste pollution, water pollution and air pollution due to Tin Bin kept near to slum, leakage water taps and nearness of Toilet seats. This can deteriorate the slum environment and affect the human health.

#### **2.9.1.1. Tin Bin Causing Solid Waste Pollution:**

In M. B. Camp slum area there are about two tin bin kept at different site and its measurement of spread of solid waste pollution around tin bin. These all details of same were presented in Table no.4.119 and Figure no.4.56. This shows that the total area under solid waste pollution is 26sq.mts and adjacent slum huts are 18 which include the 76 population.

**Table No. 4.119:** Status of Tin Bin Causing Solid Waste Pollution in M. B. Camp slum.

Location of Tin Bin Point	Dirty area covered with expelled solid waste material in sq.mts.	No. of huts near to tin bin dirty area	Total Population	Average distance of tin bin from huts in Mts.
1	14	10	42	04
2	12	08	34	06
Total	26	18	76	10

*Source: Own Sample Surveyed.*

**2.9.1.2. Drinking water taps- surrounding wet marshy places to cause water pollution:**

Daily cleanness, well maintenance and regular water supply of drinking water taps is an important aspect for sanitation in M. B. Camp slum. There are about three drinking water taps situated at different sites which are shown in Figure no.4.56. At the time of field visit observation of drinking water pipeline, water taps point, water pollution, land pollution and measurement of the covered marshy area around the drinking water taps. The details of same were presented in Table no. 4.120 and Figure no.4.56. This shows that the total area under marshy and water pollution is 32sq.mts and adjacent slum huts to it are 48 which include the 146 population.

**Table No.4.120:** Status of Drinking water taps- surrounding wet marshy places to cause water pollution in M. B. Camp slum.

Location of Common water tap point	Marshy area caused due to common water supply point (sq.mts)	No. of huts Adjacent to the common water supply point	Total Population	Distance of water tap point from huts in Mts.
1	12	18	54	06
2	10	16	49	05
3	10	14	43	04
Total	32	48	146	15

*Source: Own Sample Surveyed.*

**2.9.1.3. Toilet Seats Causing solid waste & water pollution:**

The location, daily cleanness and regular water supply of toilet seats is an important aspect for the point of view of sanitation in the urban area as well slum area in M. B. Camp slum. There are about two toilet seats it is situated at the different sites. This toilet seats create the solid waste, water pollution, land pollution and also pollution spread around toilet seats. The all details regarding this toilet seats and its pollution shown in Figure no.4.56 and Table no.4.121. This shows 32sq.mts of solid waste, water pollution and land pollution area. This is adjacent to 22 slum huts, which includes the 75 population.

**Table No.4.121:** Status of Toilet Seats Causing solid waste & water pollution in M. B. Camp slum.

Location of Toilet seat point	Dirty area covered due to toilet seats water Sq.mts.	No. of huts near to toilet seat	Total Population	Average distance of toilet seat from hut in Mts.
1	18	12	42	05
2	14	10	33	07
Total	32	22	75	12

*Source: Own Sample Surveyed.*

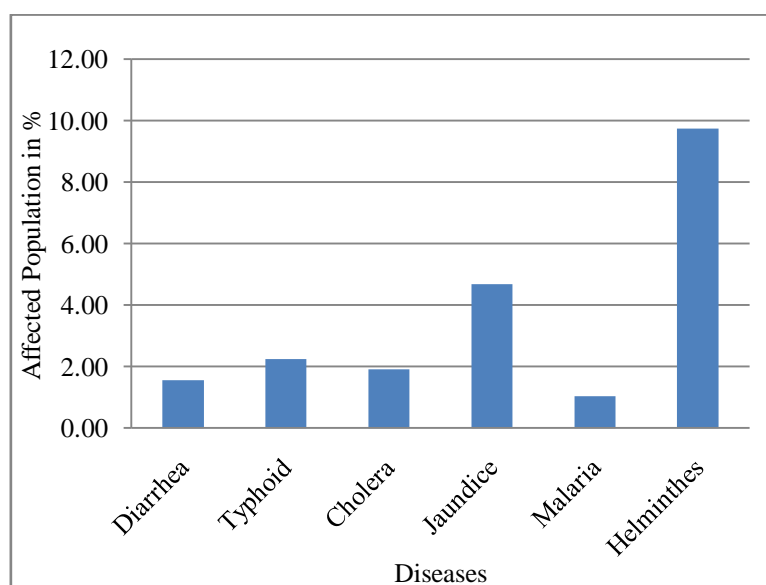
**2.9.1.4. Water borne disease reported in 2012:**

There are many problems in M. B. Camp slum such as solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Helminths affected the life expectancy of slum dwellers. According the analysis with table and graph to study area among water borne diseases affected on young population in between 15 to 59 year age. In M. B. Camp slum out of the total population 21.23% population are affected by water borne diseases near about 9.75% population is affected by Helminths disease due to polluted water. All the details of same were presented in Table no.4.122 and Figure no.4.55 of M. B. Camp slum.

**Table No.4.122:** Status of Water borne diseases in M.B.Camp slum.

Diseases	Age Group Wise Classification								T. A. P.	T.A. P. (%)
	Below 5 Years Age Group		5 to 14 Years Age Group		15 to 59 Years Age Group		Above 60Year Age Group			
	A.P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)	A. P.	A. P. (%)		
Diarrhea	12	0.47	08	0.31	12	0.47	08	0.31	40	1.56
Typhoid	17	0.66	07	0.27	30	1.17	04	0.16	58	2.26
Cholera	14	0.55	09	0.35	17	0.66	09	0.35	49	1.91
Jaundice	12	0.47	27	1.05	62	2.42	19	0.74	120	4.68
Malaria	07	0.27	03	0.12	10	0.39	07	0.27	27	1.05
Helminths	39	1.52	38	1.48	144	5.62	29	1.13	250	9.75
Total	101	3.94	92	3.59	275	10.73	76	2.97	544	21.23
Total Population is 2563										

*Source: Own Sample Surveyed.*



**Figure No.4.55:** Affected Population of Water borne diseases in M. B. Camp slum.



**Figure No.4.56:** Google image of M.B.Camp Slum in Kiwale Region.

In the forth topic give the detail regarding the deterioration of slum and urban environment of the study area its including the detailed explanation of Tin Bin Causing Solid Waste Pollution,, Drinking water taps- surrounding wet marshy places to cause water pollution, Toilet Seats Causing solid waste & water pollution, Dirty water polluted stream affecting slums insanitation and associated health Problems. All these factors are responsible for the deterioration of slum and urban environment in Pimpri Chinchwad Urban Area.

**PHOTOPLATE: 4.GARBAGE COLLECTION POINTS IN SLUM HUTS OF PIMPRI CHINCHWAD URBAN AREA**



(a) Broken Tin-bin along road & close to slum hut at Ramabai Nagar slum

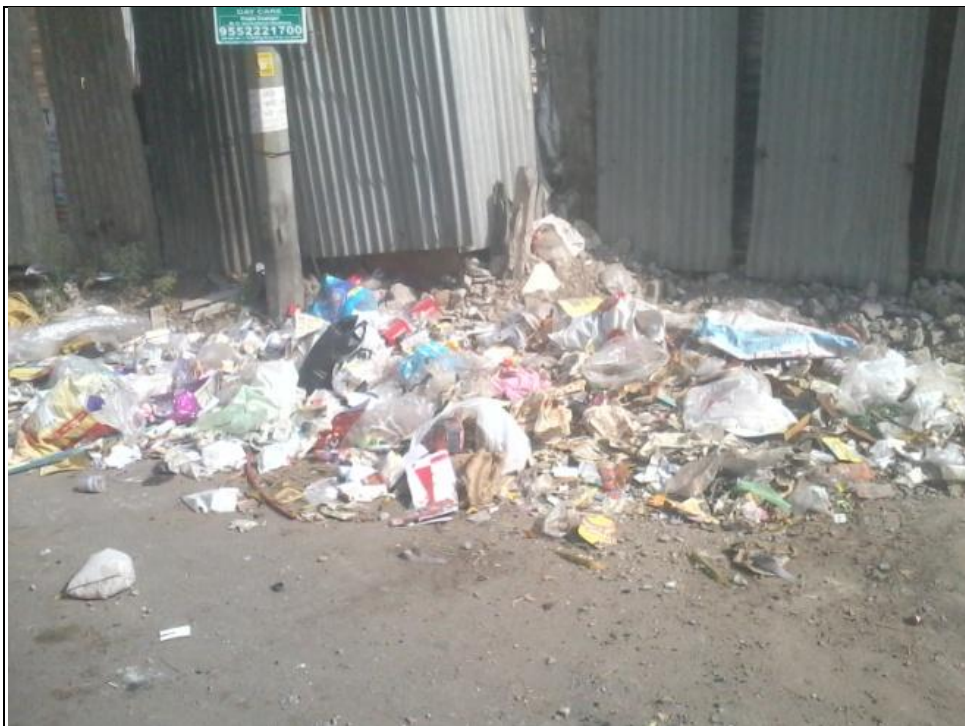


(b) Spreading & over flowing of solid waste near tin bin along the road close to slum hut in Ramabai Nagar Slum

**PHOTOPLATE: 4.GARBAGE COLLECTION POINTS IN SLUM HUTS OF PIMPRI CHINCHWAD URBAN AREA**



(c) Spreading & over flowing of solid waste near tin bin along the road close to slum hut in Ganesh Nagar Slum



(d) Spreading of garbage close to Nashik Phata Slum

**PHOTOPLATE: 5. LATRINES FACILITY IN SLUM HUTS OF  
PIMPRI CHINCHWAD URBAN AREA**



(a) Public toilet seat in Pawana Nagar slum



(b) Toilet seat near dirty water gutter in Gawali Nagar slum



**PHOTOPLATE: 5. LATRINES FACILITY IN SLUM HUTS OF  
PIMPRI CHINCHWAD URBAN AREA**



(c) River side open space use for toilet



(d) Damaged toilet seat and tin bin in Subhas Nagar slum

**PHOTOPLATE: 6. DIRTY WATER SMALL STREAMS IN SLUM HUTS OF PIMPRI CHINCHWAD URBAN AREA**



(a) Dirty water drainage in Pawana Nagar slum



(b) Polluted dirty water drainage in Gawali Nagar slum

**PHOTOPLATE: 6. DIRTY WATER SMALL STREAMS IN SLUM HUTS OF PIMPRI CHINCHWAD URBAN AREA**



(c) Dirty water drainage in Link Road (Pattra Shead) slum



(d) Dirty polluted water drainage in Mahatma Phule Nagar slum

**PHOTOPLATE: 7. WATER SUPPLY SYSTEM IN SLUM OF  
PIMPRI CHINCHWAD URBAN AREA**



(a) Private water tap passing through gutter



(b) Water pipe line passing through in gutter

**PHOTOPLATE: 7. WATER SUPPLY SYSTEM IN SLUM OF  
PIMPRI CHINCHWAD URBAN AREA**



(c) Water pipe line passing through in dirty area



(d) Air valve of drinking water pipe line surrounded by solid waste material

## **Chapter V**

### **SUMMARY AND CONCLUSION**

1. Introduction
2. Geographical Assessment of Slum
3. Socio-Economic Assessment of Slum
4. Slum Population as Resource
5. Deterioration of Urban slum Environment and its effects
6. Suggestions

## SUMMARY AND CONCLUSION

### **1. Introduction:**

Pimpri Chinchwad urban area is located at west side of Pune city and it is 160 km. far south east ward from the Mumbai. Pimpri-Chinchwad is major industrial center of Pune region and also entire of the country. This has largely developed during the last four decade. Pimpri Chinchwad is a relatively newly developed urban area of Pune city. Pimpri was basically established as a centre for refugees from Pakistan. Industrialization in Pimpri area commenced with the establishment of Hindustan Antibiotics Limited (H.A.) in 1956. The establishment of the Maharashtra Industrial Development Corporation (MIDC) in 1961-62 considerably facilitated industrial development in the area. The establishment of large-scale core industries has led to the growth of ancillary and small-scale industries in and around this industrial belt. With each passing year, the landscape saw significant changes, long stretches of farmland giving way to clusters of enclosed factory campuses. This place, located at the center of the city, holds one of the biggest industrial centers in Asia. The place is home for world renowned companies like Bajaj-Auto, Bajaj Tempo, Telco and Kinetic. Three rivers Mula, Mutha and Pawana, cover the region in three directions and even meet here.

The slums located and growing in urban area causing environmental problems as well as population in slum contributes laborious work in the cities. To analyse and asses these thing properly it is need of time to study slum in detail.

The hypothesis stated for this study is “Slums in cities are an important human resource to urban areas and are also a cause of deteriorating quality of urban environment”. which has be supportively elaborated and interpreted by the many finding and conclusion driven the various chapter of this study. The chapter wise summary and conclusions were elaborated in the following ways.

### **2. Geographical Assessment of Slum:**

Any region is the entity of many aspects. Some of them are naturally made and some are man- made aspects. Geographical assessment of any area or region is always deal with the analysis of different observation in the area and the interpretation of inter-relationship between the natural and man-made factors in the region. This work deals with assessment of natural and man-made aspects of slum. which includes

the relief, drainage pattern, geology, climate and vegetation as a natural aspects and trade, communication, industry, administrative zones, settlements type & pattern, road and railways lines as a man made aspects. These many factors are responsible for location of slums, which were summaries as follows.

The Pimpri Chinchwad urban area is a part of Deccan trap of Maharashtra. In general area is covered by thick pile of basaltic lava flow of Deccan trap. Also Pimpri Chinchwad urban area lies on high plateau there are low hills on the northern and western side of the area.

Pimpri Chinchwad area is bounded by three rivers of Pavana, Mula, and Indrayani.

Tropical climatic condition of the study area with their three distinct seasons: Summer, Monsoon and winter. The summer seasons are from March to May maximum temperature is 39°C and hottest month is April. The Monsoon season in between June to September due to south west monsoon wind with receiving moderate rainfall and annual mean rainfall is 772 mm with uneven distribution. The winter seasons from November to February Minimum temperature goes down to 10°C. Coldest month is December.

Out of the total sample slums in study area, twelve slums are located on the hillock locations, these slums are Ajanta Nagar and Nagesh Nagar slum in Akurdi region, Kalakhadak, Annabhau sathe Nagar and Tapkir Nagar slums in Wakad region, Hirabai Landage Chawal, Sanjay Nagar wakhar and Kandewasti slums in Bhosari region also Ratilal Bhagwandas and Yashwant Nagar slums in Pimpri Waghere region, Sharad Nagar in Nigadi region and M. B. Camp in Kiwale region.

The Ganesh Nagar and Link Road slums in Pimpri region, Limbore Chawal, Anandwan and Omkar Nagar in Dapodi region. These five sample slums are located at the river side location in Pimpri Chinchwad urban area.

Out of the total sample slums in study area, eight slums are located at the very close to small stream side location. These slums are Jay Malhar Nagar in Akurdi region, Santosh Nagar and Udyog Nagar slums in Chinchwad region, Ramabai Nagar slum in Pimpri region, Vitthal Nagar, Nashik Phata and Star Rubber Morewadi slum in Pimpri Waghere region and another slum is Gawali Nagar in Bhosari region.

The Anand Nagar and Saibaba Nagar slum in Chinchwad region, Annasaheb magar Nagar slum in Pimpri Waghere region. These three sample slum are located on flat land location in Pimpri Chinchwad urban area.



Out of the total sample slums in study area, thirteen slums in Pimpri Chinchwad urban area located at the near and close to the water body location. Most of these slums are at the river side and also over and near to the small streams; due to this slum population is responsible for generation of solid waste and water pollution in the slum area.

**Table No. 5.1:** Classification of slums on the basis of site characteristics.

Sr. No.	Site Characteristics	Number of slum Pockets	Concluding Remarks
1	Hill & Hill Slope Location	12	<ul style="list-style-type: none"> <li>• Maximum height from sea level is 612mts. &amp; minimum height from sea level is 555mts.</li> <li>• Average slope of surface ranging between 1.90% to 4.17%.</li> <li>• An average in every slum pockets and major slum huts are on top of the hill and few slum huts are on the slope.</li> <li>• Some slum pockets are located on left bank of the Pawana river and other slum pockets are situated on plain area with hillock on the right bank of Indrayani river.</li> </ul>
2	River Side Location	05	<ul style="list-style-type: none"> <li>• Maximum height from sea level is 574mts &amp; minimum height from sea level is 560mts.</li> <li>• Average slope of the surface is ranging between 1.00% to 1.80%.</li> <li>• All slums are situated on marshy plain ground on the left bank of the Pawana river.</li> </ul>
3	Small Stream side Location	08	<ul style="list-style-type: none"> <li>• Maximum height from sea level is 594mts &amp; minimum height from sea level is 560mts.</li> </ul>

			<ul style="list-style-type: none"> <li>• Average slope of the surface is ranging between 1.90% to 2.22%.</li> <li>• Some slum pockets are situated on narrow strip plain ground on left bank of the Pawana river and other slum pockets are situated on plain area at right bank of the Indrayani river.</li> </ul>
4	Flat Land Location	03	<ul style="list-style-type: none"> <li>• Maximum height from sea level is 583mts &amp; minimum height from sea level is 580mts.</li> <li>• Average slope of surface ranges between 1.90% to 2.22%.</li> <li>• Some slum pockets are Situated on plain ground pattern on left bank of the Pawana river and few slum huts are situated on marshy plain ground on left bank of the Pawana river</li> </ul>

*Source: Own Sample Surveyed.*

The observation made while studying the slums in Pimpri Chinchwad urban area that they are settled to near of urban functions and services Most of urban functions like industrial units, mall, market and services like, railways, roadways, hospital, educational center are responsible for emergence and growth of slum settlement.

The Ajanta Nagar slum in Akurdi region, Gawali Nagar and Khandewasti slums in Bhosari region and also Yashwant Nagar, Star Rubber Morewadi, Annasaheb Magar Nagar Slums in Pimpri Waghere region are located at very close to Pimpri Chichnwad M.I.D.C.industrial units.

The Anand Nagar slum in Chinchwad region and M. B. Camp slum in Kiwale region are located at very close to railway line.

The jay Malhar Nagar slum in Akurdi region, Udyog Nagar and Santosh Nagar slum in Chinchwad region, Kalakhadak, Tapkir Nagar and Annabhau Sathe Nagar in Wakad region, Ganesh Nagar, Ramabai Nagar and Link raod in Pimpri

region, Vithhal Nagar in Pimpri Waghere region and also Sharad Nagar Nigadi region are located at very close to roadways.

The Nagesh Nagar slum in Akurdi region, Saibaba Nagar slum in Chinchwad region, Sanjay Nagar Wakhar and Hirabai Landage Chawal in Bhosari region, Nashik Phata and Ratilal Bhagwandas slum in Pimpri Waghere region and also Limbore Chwal, Anandwan and Omakar Nagar slum in Dapodi region are located at very close to railway line and roadways in Pimpri Chinchwad urban area.

The twenty two slums were identified as very close to roadways and railway lines. The twenty slums were close to old Mumbai-Pune highway, the two slums are close to new Mumbai-Bangalore express way. Out of the twenty two slums nine slum has nearness of local roads, highway and railway lines. The six slums were found very close to industrial units in the Pimpri Chinchwad M.I.D.C.

**Table No. 5.2:** Classification of slums on the basis of major surrounding function & services.

Sr. No.	Slum Types	Number of Slum Pockets	Concluding Remarks
1	Very close to Industrial units	06	<ul style="list-style-type: none"> <li>• As the some land was found vacant area around industrial area and there is encroachment by the slum dwellers.</li> <li>• Near industrial area some lands was not properly protected and fenced by the authority due to encroachment by slum dwellers.</li> <li>• Available housing accommodation in the city is far too expensive and the poor have by and large settled down in illegal way on this land.</li> </ul>
2	Very close to Railway line	02	<ul style="list-style-type: none"> <li>• In the study area land along the railway line was not properly protected and fenced by the railway</li> </ul>

3	Very close to Roadways	11	<p>authority and was encroached by the slum dwellers.</p> <ul style="list-style-type: none"> <li>• In the study area the land along the roadways was not properly protected by any protecting mechanism and was encroached by slum dwellers.</li> <li>• In the study area land along the roadways and along the railway line was not properly protected and by any protecting mechanism and was encroached by slum dwellers.</li> <li>• Housing accommodation rent in the city is far too expensive so there is illegally encroachment on the open place of railway line.</li> </ul>
4	Very close to Railway line and Roadways	09	

*Source: Own Sample Surveyed.*

Out of the total sample slums, two slums unauthorized and located on the land owned by of Pimpri Chinchwad Municipal Corporation (PCMC). These slums are Udyog Nagar in Chinchwad region and also Link road in Pimpri region of the study area.

The Nagesh Nagar slum in Akurdi region, Annabhau Sathe Nagar slum in Wakad region, Khandewasti slum in Bhosari region and also Sharad Nagar slum in Nigadi region. These four slums are unauthorized and located on the land owned by of Pimpri Chinchwad Newly Town Development Authority (PCNTDA).

The Ajanta Nagar Slum in Akurdi region, Gawali Nagar slum in Bhosari region and also Annasaheb Magar Nagar slum in Pimpri Waghere region. These three slums are unauthorized and located on the land owned by of Maharashtra Industrial Development Corporation (MIDC).

Out of the total sample slums, four slums are unauthorized and located on the land owned by of Government. These slums are Kalakhadak slum in Wakad, Ramabai Nagar slum in Pimpri and also Vitthal Nagar and Nashik Phata slum in Pimpri Waghere region of Study area.

Out of the total sample slums, seven slums are unauthorized and located on the land owned by of private. Pimpri Chinchwad urban are. These slums are Jay Malhar Nagar slum in Akurdi region, Santosh Nagar slum in Chinchwad region, Tapkir Nagar slum in Wakad region, Yashwant Nagar and Ratilala Bhagwandas slum in Pimpri Pimpri Waghere region, Limbore Chwal slum in Dapodi region and also M.B. Camp slum in Kiwale region.

The Star Rubber Morewadi slum in Pimpri Waghere region is unauthorized and located on the owned by of Maharashtra Industrial Development Corporation (MIDC) and private of Pimpri Chinchwad urban area.

The Anand Nagar and Saibaba Nagar slums in Chicnhwad region, Hirabai landage Chwal slum in Bhosari region and also Omkar Nagar slum in Dapod region. These four slums are unauthorized and located on the owned by of Private and railway of Pimpri Chinchwad urban area.

The Ganesh Nagar slum in Pimpri region is unauthorized and located on the owned by of Government and Private of Pimpri Chinchwad urban area.

Out of the total sample slums, two slums are unauthorized and located on the land owned by of railway. These slums are Anandwan in Dapodi region and Sanjay Nagar Wakhar slum in Bhosari region of Pimpri Chinchwad urban area.

Out of the total sample slums, twenty one slums are unauthorized and located on the land owned by various sectors and departments land of Government and Municipal Corporation. Other seven slums are unauthorized slums and located on the land owned by of Private land peoples in society of Pimpri Chinchwad urban area.

**Table No. 5.3:** Classification of slums on the basis of land ownership encroachments.

Sr. No.	Land Ownership	Number of Slum Pockets	Concluding Remarks
1	PCMC Land	02	<ul style="list-style-type: none"> <li>In the study area there are PCMC lands not having fencing and any protection mechanism, were encroached by slum dwellers.</li> </ul>
2	PCNTDA Land	04	<ul style="list-style-type: none"> <li>In the study area these area PCNTDA lands was not</li> </ul>

			properly protected by the PCNTDA authority, so encroach by the slum dwellers.
3	MIDC Land	03	<ul style="list-style-type: none"> <li>In the study area these area MIDC lands was not properly protected and fenced by the MIDC authority, so encroached by the slum dwellers.</li> </ul>
4	GOVERNMENT Land	04	<ul style="list-style-type: none"> <li>In the study area these are government lands not having fencing and any protection mechanism, so were encroached by slum dwellers.</li> </ul>
5	PRIVATE Land	07	<ul style="list-style-type: none"> <li>In the study area the private disputable lands were not protected by the owners, so encroached by the slum dwellers.</li> </ul>
6	MIDC & PRIVATE Land	01	<ul style="list-style-type: none"> <li>In the study area the MIDC and Private disputable lands were not protected by the authority and owners, so encroached by the slum dwellers.</li> </ul>
7	PRIVATE & RAILWAY Land	04	<ul style="list-style-type: none"> <li>In the study area the private disputable lands and land along the railway line was not properly protected and fenced by the owners and railway authority, so encroached by the slum dwellers.</li> </ul>
8	GOVERNMENT & PRIVATE Land	01	<ul style="list-style-type: none"> <li>In the study area there are government lands and private disputable lands not having</li> </ul>

			fencing and any protection mechanism by government and owners were encroached by slum dwellers.
9	RAILWAY Land	02	<ul style="list-style-type: none"> <li>• In the study area land along the railway line was not properly protected and fenced by the railway authority, so encroached by the slum dwellers.</li> </ul>

*Source: Own Sample Surveyed.*

Most of the slums in study area, located near the industrial area which may helpful for providing satisfactory labour supply at the minimum wage rates.

Availability of electricity connection and facility to the slum dwellers which can promote the growth of slum in the urban area. It is observed that street light poles are available for twenty six slum huts in which are in poor condition and two slum huts are without street light in slum area; whereas twenty six slum huts had electrified street lights. The only two households had not have electricity connections in slums of Pimpri Chinchwad urban area.

It is the many of slum dweller they migrant from one place to another as some time if the slum was evacuated by the owner authority, these dweller were found to be migrated from their original place and again occupy the recent land near the river basin and along the small stream.

**3. Socio-Economic Assessment of Slum:**

Socio-Economic condition or status makes much effect on housing condition, living condition, life style, education, health and other all functions in slum area. The education, occupation, income, age structure and cast status all these elements are important for socio-economic assessment of slum population.

Average annual income of society plays important role in economic development and development of settlement in the area. The slum population in Pimpri Chinchwad slum area in is poor stage.

Out of the total sample slum families 26.22% families are in below Rs.50, 000 annual incomes. 56.03% families having income between Rs. 50,000 to Rs. 1, 00,000 and 17.75% families have income above Rs. 1, 00,000 annually. The half of the

families in the slum were earn their day to day living expenses, where as 26.22% slum families were struggle to earn to fulfill their needs. The only 17.75% slum families were earning with better sources in various work places of Pimpri Chinchwad urban area.

**Table No. 5.4:** Average annual income of slum families in Pimpri Chinchwad urban area.

Sr. No.	Average annual income in Rupees	Families in %	Concluding Remarks
1	Below Rs. 50000	26.22	<ul style="list-style-type: none"> <li>• These families in the slum were struggling to earn to fulfill their needs.</li> <li>• Most of the families in this income group perform the activities like, wage labour, collected raw material, painter, construction line and other work.</li> <li>• Most of the workers in this annual income group are illiterate and unskilled type.</li> </ul>
2	Rs. 50000 to 100000	56.03	<ul style="list-style-type: none"> <li>• These families in the slum earned their day to day living expenses.</li> <li>• Most of the families belonging to this income group perform activities like, rickshaw driver, industrial worker and work in marketing.</li> <li>• Most of the workers in this group are semi skilled type.</li> <li>• Most of the population in this group is working on temporary base.</li> </ul>
3	Above 100000	17.75	<ul style="list-style-type: none"> <li>• These families in the slum were</li> </ul>



			<p>earning with better sources in various work place of PCUA.</p> <ul style="list-style-type: none"> <li>• Most of the people in this income group are working in government offices, municipal corporation office, nearest administrative offices, and few have their own self small business.</li> <li>• Most of the workers in this group are skilled type.</li> </ul>
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*Source: Own Sample Surveyed.*

The use of home Appliance by slum dwellers indicates the economy level of them. Out of the total sample slum families 81.97% families are using television with Videocon Dish Company. Slum dwellers are well connected with the television but most of them were use their time for watching the serial and movies. About 68.70% families in the slum were using a cooking gas of Hindustan Petroleum Gas (HP) and Bharat Gas Company. Near about 35.69% families in the slum were connected with mobile for communication and were using the internet facilities. The 13.89% families in the slum were using of vehicles such as, motor cycle, small second hand car, excluding bicycle for traveling from one place to the another place and 12.14% families in the slum are using the Refrigerator. Most of the slum dwellers posses the all home appliances and it indicates that they were earning better to meet their needs.

**Table No. 5.5:** Area wise home appliances of slum population in Pimpri Chinchwad urban area.

Sr. No.	Type of Home Appliances	User Families in %	Concluding Remarks
1	Gas	68.70	<ul style="list-style-type: none"> <li>Some families are including average annual incomes are better than other slum population.</li> </ul>
2	Mobile	35.69	<ul style="list-style-type: none"> <li>More family members are working in some families.</li> </ul>
3	Television	81.97	
4	Vehicles	13.89	<ul style="list-style-type: none"> <li>These families average annual income is better.</li> <li>More family members are working.</li> <li>Some people in slum area are working in government offices, municipal offices, and private industry therefore confirmed income.</li> <li>Some population is working as professional work.</li> </ul>
5	Refrigerator	12.14	

*Source: Own Sample Surveyed.*

The majority of population in all slums has got the education 1<sup>st</sup> class to 10<sup>th</sup> class level it is because this primary and secondary level education is available in near the settlement of slum which is not much expensive and affordable to the slum dwellers. The major slum family has its Average annual income of about Rs. 40000to Rs. 80000. Little population of slum has got the higher education it is included the more than Rs.200000 annual income. The low income of slum dweller will not support the child to go to the higher education.

**Table No. 5.6:** Area wise education level of slum population in Pimpri Chinchwad urban area.

Sr. No.	Education level	Population in %	Concluding Remarks
1	Illiterate	29.03	<ul style="list-style-type: none"> <li>• Most of the families were poorer household and had parents with lower level education.</li> <li>• The burden of school fees and cost.</li> <li>• These populations in the slum were earning their day to day living expenses.</li> </ul>
2	Primary school	14.07	<ul style="list-style-type: none"> <li>• The majority of population has got education from 1<sup>st</sup> to 10<sup>th</sup> level.</li> <li>• It is because the free education is provided in slum area up to 10<sup>th</sup> class only.</li> </ul>
3	High school	43.79	
4	Junior college	8.5	<ul style="list-style-type: none"> <li>• Most of the populations are working as professional type work.</li> <li>• These people are educated due to this are getting better education.</li> <li>• These populations got the very well education because of average annual income is better than other population in slum.</li> <li>• These populations in the slum were earning with better sources in various work in places of Pimpri Chinchwad urban area.</li> </ul>
5	Under graduate	3.51	
6	Higher educated	1.1	

*Source: Own Sample Surveyed.*

Out of the total sample slum population, 52.53% population is in S.C. categories, 17.57% population is in Open categories, 17.20% Population is in O.B.C.

categories and 12.70% population is in N.T. categories are living in the slum area of Pimpri Chinchwad urban area.

Out of the total sample slum families, 52.53% families in Buddha religion, near about 33.12% families in Hindu religion, about 13.25% families in Muslim religion and only 1.10% families in Christian religion are living in the slum area of Pimpri Chinchwad urban area.

#### **4. Slum Population as Resource:**

Pimpri Chinchwad urban area relatively developed with various urban functions and most of the slums are located at near and close to the various urban functions. It is industry, mall, educational center, market, hospital and administrative zone. These urban functions were providing the job opportunities to the nearby population by doing activities in urban areas. The jobs like salesman, helper, welder, fitter, job maker, turner, painter, draftsman, cutter, carpenter etc. were available in this area for slum dwellers. It is also observed that the other jobs like hospital cleaning; mall working, administrative jobs and educational jobs were also available in the nearby area. Therefore slum populations of Pimpri Chinchwad urban area were supply important human resource for various functions and activities.

Out of the total working population male contributes the 80.92% and the female contributes the 19.08% share. The many of males and females works at the nearest places of slum of Pimpri Chinchwad Urban area.

It is observed that many of the people from the under survey are wage labour. Near about 50.78% population are working as wage labour, 23.54% population are working as industrial worker, 23.39% population are working as Non-professional workers and only 2.39% population are working as professional workers. Therefore most of the populations were working as wage labour in nearest urban area of Pimpri Chinchwad urban area.

Area wise occupational status of slum population and its causes shown in Table no.5.7.

**Table No. 5.7:** Area wise occupational status of slum population in Pimpri Chinchwad urban area.

Sr. No.	Occupation type	Population in %	Concluding Remarks
1	Wage labour	50.78	<ul style="list-style-type: none"> <li>• All these populations are illiterate.</li> <li>• Most of the people in this income group perform the activities like, wage labour, collected raw material, painter, construction line and other work.</li> <li>• These populations in the slum earned their day to day living expenses.</li> <li>• These populations in the slum were struggling to earn to fulfill their needs.</li> </ul>
2	Industrial worker	23.54	<ul style="list-style-type: none"> <li>• Most of the populations belonging to this income group perform activities like, rickshaw driver, industrial worker and work in marketing.</li> <li>• Most of the people in this group are semi skilled type.</li> <li>• Some people are working as technical work because of more experience.</li> </ul>
3	Non-professional worker	23.29	<ul style="list-style-type: none"> <li>• These people are educated but they don't work regularly.</li> <li>• These population are working in marketing, small business, tea shop(<i>Tapari</i>)</li> </ul>
4	Professional worker	2.39	<ul style="list-style-type: none"> <li>• These populations are better educated than other population in slum.</li> <li>• Theses population is working as official type work, technical work.</li> </ul>

*Source: Own Sample Surveyed.*

Out of the total sample slum population 56.21% population were working as wage labour of N.T. categories in various activity of nearest urban function. It is more

than other categories of slum population and only 1.32% population were working as professional worker of Open categories in various activity of nearest urban functions. It is lower than other categories of slum population in Pimpri Chinchwad slum area.

The education is an important tool which can develop the population to get it ready for work. That means it is able to generate the skillful peoples which would be supplied to nearest urban areas. The scenario of primary and secondary education of slum population shows that near about 86.89% of population found to be learned up to 10<sup>th</sup> standard. The today's practice of primary and secondary education is not providing more skills to the student; hence it is found that many of the students remained unskilled, therefore they will have to work as the wage labour. It is therefore to be stated that the slum were definitely provide the need of wage labours of surrounding urban region. The only 13.11% of population found to be evolved as a good profession. This is a very less number.

It is need of time that the Government, Municipal Corporation, Policy Maker should concentrate on providing technical skills to the students of secondary classes. The point must be noted that the Government, NGOS and Policy Maker should focus on to increased the proportion or percentage involvement of students and younger in higher and technical education.

Out of the total sample slum population, 70.17% population is in between 15 to 59 year age group it is working population and another 29.03% population is in below 14 year age group and above 60 year age group. Therefore slum as supply younger population for works in various activities of Pimpri Chinchwad urban area.

The dependency ratio of Wakad, Kiwale and Nigadi slum region is higher than other sample slum regions of Pimpri Chinchwad urban area. Therefore most of the populations in slum of Pimpri Chinchwad urban area are working in various activities related to wage labour. Also child population and old populations are engaged in small work places, such as cleaning and wetter in hotel. So dependency ratio is reduced of slums in Pimpri Chinchwad urban area.

The labour force participation rate of female in Nigadi slum region is higher than other sample slum regions of Pimpri Chinchwad urban area. Also total labour force participation rate of Nigadi slum region is higher than other sample slum regions of Pimpri Chinchwad urban area and male labour force participation rate of Akurdi region is higher than other sample slum regions of Pimpri Chinchwad urban area.

**5. Deterioration of Urban slum Environment and its effects:**

There many problems in slum of Pimpri Chinchwad urban such as, air pollution, land pollution, lack of latrine facilities, lack of medical facilities and so on. The polluted water, insanitation and its effects on human health of slum population in Pimpri Chinchwad urban area studied to get some results.

The table no 5.8 shows the responsible factors for water pollution, land pollution, air pollution and associated water borne diseases in sample slum of Pimpri Chinchwad urban area.

**Table No.5.8:** Responsible factors for deterioration of Urban slum environment.

Slum Region	Slum Pockets Name	Huts for per Tin Bin Point	Huts for per Common water tap	Population for per Toilet seat Point	Population affected by Water Borne Diseases in %	Concluding Remark
Akurdi	Jay Malhar Nagar	24	18	132	54.93	1. Lack Of Latrine Facilities. 2. Dirty water polluted stream are Flowing.
	Nagesh Nagar	188	94	856	30.63	1. Lack Of Latrine Facilities.
	Ajanta Nagar	752	301	2505	54.83	2. Lack of Garbage collection point and system.

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						3. Less number of public water taps.
Chinchwad	Santosh Nagar	28	11	147	53.4	1. Lack Of Latrine Facilities.
	Udyog Nagar	163	130	1557	48.62	2. Lack of Garbage collection point and system. 3. Less number of public water taps. 4. Dirty water polluted stream are Flowing.
	Anand Nagar	62	41	486	44.54	1. Lack Of Latrine Facilities.
	Saibaba Nagar	97	73	427	54.92	2. Lack of Garbage collection point and
Wakad	Kalakhadak	142	44	1039	44.23	
	Tapkir	30	18	209	45.8	



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	Nagar					system.
	Annabhau Sathe Nagar	48	36	349	44.19	3. Less number of public water taps.
Pimpri	Ganesh Nagar	31	24	206	62.53	1. Lack of Latrine Facilities.
	Ramabai Nagar	304	152	1451	51.38	2. Lack of Garbage collection point and system.
	Link Road	220	110	881	56.36	3. Less number of public water taps. 4. Dirty water polluted stream are Flowing. 5. More population affected by water born diseases

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Bhosari	Sanjay Nagar Wakhar	47	40	154	43.28	1. Lack Of Latrine Facilities.
	Hirabai Landage Chwal	75	57	612	42.81	2. Lack of Garbage collection point and system.
	Kandewasti	42	32	197	41.26	3. Less number of public water taps.
	Gawali Nagar	217	163	1320	35.58	1. Lack Of Latrine Facilities.
Pimpri Waghere	Vitthal Nagar	342	342	3448	48.72	2. Lack of Garbage collection point and system.
	Star Rubber Morewadi	306	183	1847	60.12	3. Less number of public water taps.
	Nashik Phata	51	31	231	43.38	4. Dirty water polluted stream are Flowing.

	Annasaheb Magar Nagar	107	81	359	44.82	1. Lack Of Latrine Facilities.
	Yashwant Nagar	81	54	351	44.16	
	Ratilal Bhagwandas	13	7	58	44.35	
Dapodi	Limbore Chwal	94	63	508	26.7	2. Lack of Garbage collection point and system.
	Anandwan	34	26	167	57.36	
	Omkar Nagar	52	39	141	31.6	
Nigadi	Sharad Nagar	78	58	544	17.37	3. Less number of public water taps.
Kiwale	M.B.Camp	322	214	1282	21.23	

*Source: Own Sample Surveyed.*

Lack of garbage collection facilities due to most of the huts dumped garbage in the Open place, dirty small stream side, river side and other areas of slum of Pimpri Chinchwad Urban areas.

Majority of the slum populations and households depend on the Municipal water supply for the drinking, kitchen, bathing, laundry and other purpose. The water supply for the slum population is very low the requirement of the people due to they are living in the dirty condition.

Lack of toilet seats, poor condition of toilet seats, irregular water supply and lack of cleaning of toilet seats facilities due to the most of the population is using the open space for toilet.

Out of the total sample slum areas, ten slum areas are situated near and close to dirty water stream side and bank of river of Pimpri Chinchwad urban area.

Lack of tin bin, lack of toilet seats, lack of water tap supply system and dirty water stream are responsible for the deterioration of slum environment as well as urban environment. Therefore the factors of deteriorations lead to the diseases or illness in slum area of Pimpri Chinchwad urban area.

In slum of Pimpri Chinchwad urban area face many problems, like insanitation; dirty water streams lack water supply system, lack of tin bin facility and poor condition of tin bin, lack of toilet facility and irregular water supply for toilet are responsible for health hazards of slum population of Pimpri Chinchwad Urban area.

In the slum area showed significantly high incidence of water and sanitation related diseases in slum and than elsewhere.

The environmental problems in slums are aggravated due to a number of factors like; their location at environmentally unsafe sites no sewerage and sanitation in the communities, poor personal hygiene due to less availability of water, poverty and lack of environmental education.

Also solid waste pollution, land pollution, water pollution, air pollution, lack of latrine facility, poor sanitary condition & Poor quality of water leads to illnesses like Diarrhea, Typhoid, Cholera, Jaundice, Malaria & Intestinal Worms affecting the life expectancy of slum dwellers of Pimpri Chinchwad urban area.

## **6. Suggestions:**

On the basis of the study carried out, following are the few suggestions made for the improvement of the slum scenario, slum environment and for the upgradation of slum human resources in the study area. The suggestions were expected to be undertaken by slum population as well as local government authorities like, PCMC, M.I.D.C., P.C.N.T.D.A. and also by the NGOs working in the area.

1. The open areas along the river basin (valley flanks) and the stream side areas were strictly protected and the purposive utilizations of this land must be undertaken as early as possible by the concerned authorities.
2. The open areas along the both sides of roadways and also along the both sides of railway lines were strictly prohibited to settled any slum by the local concerned authority or if the slum were get settle over there they should immediately moved to another locations by taking remedial actions or again they must be rehabilitated.

3. Local authority, Municipal Corporation, NGOs and Government will apply the free education scheme till secondary class children and also provide the skill and technical education though there some schemes for women empowerment and skill development for the girl Child. The Childs, younger and women's does were not found much acquainted with these schemes. Therefore these schemes were to be supported encourage planning and counseling to control the drop out and motivate the quality education. There is need of motivating the women and poor dwellers to facilitate skillful training towards empowerment and self employment which must be initiated or undertaken by the PCMC, local authority, NGOs, local education institutes and government.
4. Government, Local authority, Municipal Corporation should work together with the organizations of the slums and providing alternatives to slum formation. Whenever a worker migrant to a city for work his employer must be ensure that he is provided with suitable responsibility of all big and small employers.
5. Local government, Municipal Corporation should undertaken measure to improve the natural aspects, like, hill slope and hillock location, small stream side location, river side location and flat land location of the dwelling places.
6. Sewage collected from the slum should be treated properly and not to be directly delivered in the natural streams. The scheme for sewage treatment must be properly designed and implemented by the PCMC.
7. Pimpri Chinchwad Municipal Corporation will scale up the implementation of the scheme for solid waste management, involving the slum community in conservancy operations and management.
8. The scheme to supply the protected drinking water must be designed to provide the clean and safe water to the dwellers. The number of common water taps and private water supply connections should be increased but at the same time water use must be controlled by applying meter system for personal tap and awareness camps should be carried out to control the common water supply.
9. The health department in PCMC should be systematically coordinate frequency of lifting of overflowing garbage tin bins and the same way they must increase the number of tin bins at possible locations connected to the slum.

10. The slum dweller should be trained for segregation decomposable organic waste and decomposable wastes. The common community plants were also to be constructed for decomposition of organic waste collected from slum pockets.
11. To have a good quality basic infrastructure service of safe water, sanitation, better and reasonable housing, waste removal and employment opportunities, government should plan up for the involvement of local industrialist, NGOs through the key role of PCMC and MIDC.
12. Pimpri Chinchwad Municipal Corporation should supply the quality, infrastructure of roads, water supply system, sewerage facility, drainage system, lighting facility, latrine facility and public transport services in slum area of Pimpri Chinchwad urban area.
13. Through the local government and incentives Promote development of hospitality, industry, commercial center and educational center and entertainment center of nearby slum of Pimpri Chinchwad urban area.
14. Slum area becomes more problematic for the development of city according to standard of living and other day today needs. PCMC has to do planning for it.

As this is representative study it only shows the scenario of twenty eight slum pockets in particular region, which also represents the general trends in slums of Pimpri Chinchwad Municipal Corporation urban area. The study will support and lead to conclusion that in seventy one slum Pockets in Pimpri Chinchwad Municipal Corporation urban area. Scenario will have general as same as like that of slums under study.

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## ABBREVIATIONS

LIG	Low income group
NGO	Non- Government organization
MHADA	Maharashtra housing and area development authority
SRA	Slum rehabilitation authority
UBSP	Urban basic services for the Programmes
USEP	The urban self – employment programme
UWEP	The urban wage employment programme
USA	United state of America
AP	Affected population
TAP	Total affected population
SC	Schedule caste
ST	Schedule Tribe
NT	Nomadic Tribes
OBC	Other Backward Class
CDP	City development Plan
UEMS	Urban environmental management system
PCMC	Pimpri Chinchwad Municipal Corporation
SOI	Survey of India
GPS	Global position System
GIS	Geographical Information System
PCNTDA	Pimpri Chinchwad Newly Town Development Authority
MIDC	Maharashtra Industrial Development Corporation
RLY	Railway
GOVT	Government
PVT	Private
HA	Hindustan Antibiotic Limited
AD	Anno Domino
BC	Before Christ
N	North
S	South
E	East

W	West
NE	North East
NW	North West
SE	South East
SW	South West
FT	Foot
PCUA	Pimpri Chinchwad Urban Area
NH	National Highway
SH	State Highway
IBMR	Institute of Business Management and Research
NARI	National Aids Research Institute
CIRT	Central Institute of Road Transport
TELCO	Tata Engineering and Locomotive Company
TCPO	Town and Country Planning Organisation
PMT	Pune Municipal Corporation
LIC	Life Insurance Corporation
BSNL	Bharat Sanchar Nigam Limited
RTO	Regional Transport office
LG	Life Good
HP	Hindustan Petroleum
IT	Information Technology
CDR	Child Dependency Ratio
ADR	Aged Dependency Ratio
DR	Dependency ratio
MLFPR	Male labour force participation Rate
FLFPR	Female labour force participation Rate
LFPR	Labour force participation Rate
TV	Television
UG	Under Graduate
PG	Post Graduate

## GLOSSARY

Chawl	Housing originally Build as Accommodation for Mill Workers
Hutment	Collection of Huts
Katcha	Flimsy, Poor quality
Pucca	Solid
Zopadpattis	Squatter settlement
Pattra Chawl	Housing Build with metal material
Agricultural Labour	worker in agriculture
Professional Workers	Include the people of work as Teacher, Engineers, and Doctors etc.
Unprofessional Workers	Include the people of work as Shop keeper, small businessman etc.
Wedge Workers	Include the people of work as Constructions line, Cleaners and other.
Industrial Workers	Include the people of work as helper, Car painter, Driver, Seals man etc.
Gutter	Dirty water flowing through the small stream in road side and a shallow trough fixed Beneath the edge of a roof for carrying off rainwater.
Samadhi	Go a live in Tomb
Gosavi	Prist
Hillock	A small hill or mound.
Bhangar	Metal raw material
Dependency ration	A measure showing the number of dependents (aged 0-14 and over the age of 65) to the total population (aged 15-64). Also referred to as the "total dependency ratio
Labor Force	Refers to the total labor force divided by the

Participation Ratio	total number of population.
Illiterate	A person who is unable to read or write.
Junior College	A college offering courses for two years beyond high school, either as a complete training or in preparation for completion at a senior college.
Graduation	The receiving or conferring of an academic degree or diploma.
Toilet Seat	A toilet seat is a hinged unit consisting of seat, and usually a lid, which is bolted On to a toilet bowl for a flush toilet.
Water Borne Diseases	Waterborne diseases are caused by pathogenic microorganisms that most commonly are transmitted in contaminated fresh water. Infection commonly results during bathing, washing, drinking, in the preparation of food, or the consumption of food thus infected.
Water Tap	Water faucet: a faucet for drawing water from a pipe or cask.
Diarrhea	A condition in which feces are discharged from the bowels frequently and in a liquid form.
Typhoid	An infectious bacterial fever with an eruption of red spots on the chest and abdomen and severe intestinal irritation.
Cholera	An infectious and often fatal bacterial disease of the small intestine typically contracted from infected water supplies and causing severe vomiting and Diarrhea.



Jaundice	A medical condition with yellowing of the skin or whites of the eyes, arising from excess of the pigment bilirubin and typically caused by obstruction of the bile duct, by liver disease, or by excessive breakdown of red blood cells.
Malaria	An intermittent and remittent fever caused by a protozoan parasite which invades the red blood cells and is transmitted by mosquitoes in many tropical and subtropical regions.
Helminthes	A parasitic worm; a fluke, tapeworm, or nematode.
Insanitation	Lack of sanitation; careless or dangerous hygienic conditions.

## APPENDIX

### Interview Arrangement

#### Part I

#### General Questionnaire for slum

\*Name of the slum pockets: \_\_\_\_\_

1. Type of road:                      Metal/Unmetal

2. Length and width of road: \_\_\_\_\_

3. Area of the road: \_\_\_\_\_

4. Total no. of roads in the slums: \_\_\_\_\_

5. Type of drainage/ gutter in the slum: \_\_\_\_\_

6. Total area of drainage:      Length: \_\_\_\_\_ Width: \_\_\_\_\_

7. Information of garbage disposer system:

i. Total tin bins location of slum: \_\_\_\_\_

ii. Total no. of tin bins in the slum: \_\_\_\_\_

iii. Location of garbage disposer: \_\_\_\_\_

iv: Types of regular garbage collection:

a. Wet garbage: \_\_\_\_\_                      b. Plastic garbage: \_\_\_\_\_

c. Dry garbage: \_\_\_\_\_                      d. Other garbage: \_\_\_\_\_

8. Slum huts near to river basin area \_\_\_\_\_

9. Slum huts near to railway line area: \_\_\_\_\_

10. Whether there is public shelter:                      Yes/No

11. If yes, what is area? \_\_\_\_\_

12. Whether there is danger of flood? \_\_\_\_\_

**Part II**

**Questionnaire for Household/Huts**

1. Name of slum pockets: \_\_\_\_\_
2. Name of the head of the family: \_\_\_\_\_
3. How long have you been staying here? \_\_\_\_\_
4. Whether the hut is owned by the head of the family: Yes/No
5. If rental, what is the name of the owner? \_\_\_\_\_
6. Areas of hut: Length: \_\_\_\_\_ ft, Width \_\_\_\_\_ ft,
7. No. of doors of the hut: \_\_\_\_\_
8. No. of windows of the hut: \_\_\_\_\_
9. Whether the door and windows are suitable for ventilation and Sunlight: Yes/No
10. Whether there is electricity in the means of light? Yes/No
11. If not, what are the means of light: \_\_\_\_\_
12. Whether there is a tap connection of your own drinking water? Yes/No
13. If not, can you use public tap? Yes/No
14. How many taps are attached to public water tap? \_\_\_\_\_
15. Which side of hut is road: \_\_\_\_\_
16. What is the type of road: Metal/ Unmetal
17. What is the width of the road: \_\_\_\_\_?
18. Whether road is used for four wheeler Yes/No
19. Whether there are street light around the hut? Yes/No
20. If yes, how many street lamps: \_\_\_\_\_
21. What is the distance between the hut and street light: \_\_\_\_\_

22. Whether the street light are on regularly: \_\_\_\_\_
23. Whether there is latrine facility in the hut: \_\_\_\_\_
24. If not is there public latrine available? Yes/No
25. Do you use public latrine? Yes/ No
26. How many blocks are there in public latrine? \_\_\_\_\_
27. Whether there is a regular water supply in public latrine? Yes/No
28. Whether there is a regular maintenance of public latrine? Yes/No
29. If your Own or public latrine is not available, which place do you use for excretion or toilet: \_\_\_\_\_
30. How long is the place of excretion or toilet from the hut: \_\_\_\_\_
31. Whether your hut is situated close to gutter channel: Yes/No
32. If yes, what type of gutter channel is that? Open/ Close
33. Where do you throw the garbage? Open space/ tin bin/ other
34. What type of fuel do you use for cooking? \_\_\_\_\_
35. Write in brief about the problems you face in and around Hut:  
\_\_\_\_\_  
\_\_\_\_\_
36. Mention the objects used in your hut: \_\_\_\_\_  
\_\_\_\_\_

**Part III**

**Questionnaire for Family Information**

1. Information of family members:

Sr. no. (1)	Name (2)	Relation with head of the family (3)	Age (4)	Sex: M/F (5)	Religion & Cast (6)

Education (7)	Name of the School/College (8)	Place of work (9)	Monthly Income in RS. (10)	Annual Income in Rs. (11)

2. Information of daily expenses in family:

Sr. no.	Expenses details	Monthly expenses	Annual expenses	Remark
1	Rent of Hut			
2	Grocery & similar			
3	Milk & Vegetable			
4	Religious programme & wedding			
5	Educational Expenses			
6	Light bill, Gas, Fuel			
7	Medicine & Hospital			
8	Other			

3. Family healthcare information.

Sr. no.	Indoor regular clinic / drug name persons who	Name of disease	Type of hospital (Government /Private )
1			
2			
3			
4			
5			

4. Are there any epidemic diseases in the slum, every year? Yes/No

5. Please give the information of the family members who have epidemic diseases till date.

Sr. no.	Name of the family members affected by disease	Type of diseases	In which years have they affected by disease	Expenditure for hospital
1				
2				

6. The name of municipal hospital or clinic in and around of hut: \_\_\_\_\_

7. Which type of facility is available in hospital: \_\_\_\_\_

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- i. Requirement services are available? Yes/No
- ii. Daily supply of medicine? Yes/No
- iii. Admitted facility is available? Yes/No
- iv. Food facility is available for patient? Yes/No

v. What is your opinion about medical facilities of Government and Municipal hospital: \_\_\_\_\_

8. Give information about the difficulties in child education. \_\_\_\_\_

9. Details of educational employee in slum hut.

Sr. no.	Name of the employee	Work place	Monthly salary	Temporary/Permanent
1				
2				
3				

10. Draw the sketch of slum hut with direction: