Slum Free City Plan of Action - Kanpur

Regional Centre for Urban and Environmental Studies
(Sponsored by Ministry of Urban Development, Govt. of India)
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ACRONYMS

BPL –Below Poverty Line

BSUP – Basic Services for Urban Poor

CBD – Central business district

CBO – Community Based Organization

CCA – Compensatory City Allowance

CDP - City Development Plan

CDS - Community Development Societies

CGG - Centre for Good Governance

CO – Community Officer

DPR – Detailed Project Report

DU - Dwelling Unit

DUDA – District Urban Development Agency

EWS - Economic weaker section

FAR –Floor Area Ratio

FSI - Floor Space Index

GIS – Geographical Information System

GoI – Government of India

HH's – Households

HRA – Housing Rent Allowance

HUDCO – Housing And Urban Development Corporation Ltd

IHSDP – Integrated Housing and Slum Development Program

JnNURM – Jawaharlal Nehru National Urban Renewal Mission

LDPE - Low Density Polyethylene

LIG - Low Income Group

LPCD –Litre per capita per day

MIS – Management Information System

MoHUPA – Ministry of Housing and Urban Poverty Alleviation

MLD - Million Litres per Day

MSW –Municipal Solid Waste

NGO's – Non-Governmental Organizations

NHC - Neighborhood Communities

NHG - Neighborhood Groups

NNRC – National Network Resource Centre

NOAPS –National Old Age Pension Scheme

O&M – Operation & Maintenance

PO - Planning Officer

POA - Plan Of Action

PPP - Public Private Partnership

RAY – Rajiv Awas Yojana

RCUES - Regional Centre for Urban and Environmental Studies

RCV - Resident Community Volunteers

KDA – Kanpur Development Authority

KMP –Kanpur Master Plan

KNN – Kanpur Nagar Nigam

SEZ –Special Economic Zone

SFCPoA – Slum Free City Plan of Action

SHG – Self Help Groups

SJSRY – Swarna Jayanti Shahari Rozgar Yojana

SLNA - State Level Nodal Agency

SLSC - State Level Scrutinize Committee

STEP UP - Skill Training for Employment Promotion amongst Urban Poor

SUDA – State Urban Development Agency

TDR - Transferable Development Rights

TPIMA - Third Party Inspection and Monitoring Agency

UCDN - Urban Community Development Network

UDPFI - Urban Development Plan Formulation and Implementation

ULB - Urban Local Body

UPHDB – Uttar Pradesh housing and Development Board

UPJN – Uttar Pradesh Jal Nigam

UPRSAC –Uttar Pradesh Remote Sensing Applications Center

USHA - Urban Statistics for Human Resource & Assessments

UWESP - Urban Women Employment & Self help Programme

UNITS

1 Crore (Cr) – 100 Lakhs

1 Hectare (Ha) -10,000 Square Meters (Sq.mts)

1 Hectare (Ha) -2.471 Acres (Ac)

1 Metric Ton (MT) -1000 Kilograms (Kg)

1 Million – 10 lakhs

1 Square Kilometer (Sq.Km) -100 Hectares (Ha)

EXECUTIVE SUMMARY

The Government of India unveiled a holistic mission "Rajiv Awas Yojana" (RAY) to envision a slum free India, benefitting about 81 million urban poor with affordable housing, decent & dignified living environment and well developed basic amenities. Achieving Slum Free India though appears to be a very difficult exercise, the Ministry of Housing and Urban Poverty Alleviation (MoHUPA), GoI, has categorized the tasks and sub tasks in such a manner, providing a clear roadmap for the state governments to follow certain methodology and process in conducting the categorical steps. Slum Free City Planning is a holistic mission to eradicate poverty, systematize the squatter and hazardous settlements, integrate the plan with other poverty alleviation schemes and make them as regular engines of both socio-economic and sustainable development.

The key aspects of Slum Free City Planning comprises mainly of Urban Planning, Law and Legislation, MIS, GIS, Provision of Land, Community Participation, Stakeholder Convergence, Project Management and Capacity Building. The process starts with conducting slum survey and updating MIS database, preparation of the city and slum level maps in GIS, integration of the spatial and non-spatial data, analysis of the existing situation of slums, preparation of slum specific proposals, involve the community from the inception of project, preparation of DPR, project monitoring and implementation to achieve Slum Free India.

The Ministry of Housing and Urban Poverty Alleviation (MoHUPA) issued guidelines on RAY for preparation of State Slum-free City Plan of Action (SFCPoA), Community Mobilization, MIS and GIS etc. The states have to pass legislation for the assignment of property rights to the slum dwellers, and take steps to prevent new slums, with certain existing reservation of land.

The present report is the tentative Plan of Action for Slum Free City under the scheme of Rajiv Awaz Yozana (RAY) sponsored by the Ministry of Housing and Urban Poverty Alleviation (MoHUPA), Govt. of India. To implement the scheme, the city of Kanpur is selected as one of the Pilot Cities for the development of 412 slums as part of inclusive growth. The report is structured with prime objective of addressing the existing slums as curative step and also to ensure **slum free Kanpur** as a preventive measure. The report contains 7 sections namely, ***SFCPoA Initial Framework, City Profile & Institutional Institutional framework, Assessment of Existing status of Slums, Slum Rehabilitation strategy, Requirement & Investment, Slum Preventive strategy, Finanacing strategy*** respectively. The slum – free City Plan of Action includes preparation of Geo-referenced city base map satellite imagery, identifying and demarcating slums and surrounding vacant lands, analyzing the slum profile features, finding infrastructure gap assessment, line estimates and detailed city/slum level analysis. The report provides a gross understanding of slum situation in the city, categorizes the slums, proposes the development mode required for each slum, and majorly phasing the slum development for the next coming five years. The first year prioritized slums have been finalized by conducting various stakeholder meetings under the leadership of "Project Officer", District Urban Development Authority (DUDA) of the city. The report aims to summarize, analyze the slum situation and propose a roadmap to reach slum free Kanpur.

This report is accompanied by annexure I & II where the first and second contains the data tables and analysis of each slum profile comprising of socio economic, household and livelihood information, gap assessment and proposed line estimates. The present report therefore needs to be referred with annexure I & II.

SLUM FREE KANPUR

Kanpur is a major city in Uttar Pradesh state next to the state capital, Lucknow. Kanpur is often referred as the economic and industrial capital of the state. The city is an administrative headquarters of Kanpur district. The city has 412 slums with 152124 households. Out of the total slums 101 are notified slums and the remaining 311 are non-notified. About 26% of the city population lives in slums. Among the slum population, 79% belongs to OBC and SC division of social groups and 36% are living below the poverty line (BPL). It is found that the slums are having a housing deficit of 93116. In concern to Infrastructure, 48% of the slum households do not have full access to individual water supply connections. Ironically it is found that, 47% of the slum households practice open defecation. In this context, the plan of action provides line estimates for housing and infrastructure gaps and proposes civic amenities as per RAY guidelines and the report calls for an approval and action to prepare DPR's for year wise phased slums.

ACKNOWLEDGEMENT

The Regional Centre for Urban and Environmental Studies (RCUES), Hyderabad was established in the year 1970 by the Ministry of Urban Development, Government of India in the Osmania University campus. The RCUES caters to the training and research needs of the constituent state governments namely, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Arunachal Pradesh, Nagaland and the Union Territory of Puducherry in the urban sector. Apart from the training programmes, the RCUES is providing capacity building, research and consulting services and has developed exclusive divisions comprising of twenty in house professionals in the areas of Urban Finance, Environment, Urban planning, GIS and Poverty Alleviation.

RCUES, Hyderabad has been awarded the project of preparation of 'Slum Free City Plan of Action' under Rajiv Awas Yojana (RAY) Scheme for Lucknow, Kanpur, Allahabad, Varanasi, Agra and Meerut of Uttar Pradesh state. The RCUES has completed the plan of action reports following the step by step methodology of RAY as specified by the Ministry of Housing and Poverty Alleviation, Government of India.

RCUES, Hyderabad would like thank the Director and all the staff of State Urban Development Agency (SUDA), Lucknow for the co-operation they provided during the project period. We would like to thank the Project Officers (PO's) and the staff of District Urban Development Agency (DUDA) of respective cities for their generosity while helping RCUES teams to collect data, conduct workshops and played a big role in the preparation of Plan of Action. We would also like to express our gratitude to the officials of respective Nagar Nigam's, Jal Sansthan and other agencies who co - operated for the successful preparation of Slum Free City Plan of Action.

RCUES, Hyderabad looks forward for implementation of the effective strategies by the nodal agencies and making Uttar Pradesh state free from slums.

CHAPTER 1 – INTRODUCTION

1.1 BACKGROUND

The Government of India in 2009 launched Rajiv Awas Yojana (RAY) with an aim to achieve the vision of a 'slum - free India' with inclusive and equitable cities in which every citizen has access to basic civic and social services and decent shelter. It aims to achieve this vision by encouraging States/Union Territories to tackle the problem of slums in a definitive manner, by a multi-pronged approach. It focuses on bringing all existing slums, notified or non-notified within the formal system and enabling them to avail of the same level of basic amenities as the rest of the town. It also seeks to tackle the shortages of urban land and housing that keeps shelter out of reach of the urban poor. The Rajiv Awas Yojana aims to provide support to enable States to redevelop all existing slums in a holistic and integrated way and to create new affordable housing stock. The Ministry of Housing and Urban Poverty Alleviation (MoHUPA) has instituted for this holistic RAY scheme.

Considering the importance of the scheme for achieving inclusive and sustainable development of the city, state and the nation, the Slum Free City Plan of Action for Kanpur city is prepared to provide a systematic and holistic approach to tackle with existing slums in the city and to prevent the formation of new slums in future.

1.2 OBJECTIVES OF SLUM FREE CITY PLAN OF ACTION

A Slum Free City Plan of Action (SFCPoA) is an important instrument for cities to attain the objectives of RAY. It is a citywide plan of action, which consists of two parts; a plan to bring about the improvement of existing slums through both planning and stakeholder participation of the existing dwellers and strategies for prevention of future slums. In doing so, the 'Slum Free City Plan of Action' takes into consideration the present status of slums, priorities of slum dwellers, the resources and capabilities of the city in improving the quality of life of the urban poor and the capacity of the urban poor to be partners in this development process.

The Objectives of Rajiv Awas Yojana (RAY):

- Bringing existing slums within the formal system and enabling them to avail of similar level of basic amenities as the rest of the town/city;
- Redressing the failures of the formal system that lie behind the creation of slums; and
- Tackling the shortages of urban land and housing that keep shelter out-of-reach of the urban poor and force them to resort to extra-legal solutions in a bid to retain their sources of livelihood.

1.3 PERSPECTIVE

The lack of housing and basic services at the required pace to meet the challenges of urbanization has resulted in the development of slums and squatter settlements with wider ramifications on the health, safety and well-being of the citizens. In 2001, there were 23.5 percent of households in urban areas which were living in slums. In 2011, it has come down to 17.4 percent. But there are still 13.74 million slum households and 68 million people living in the slum areas (Census, 2011). As per the report of the Technical Group on Urban Housing Shortage (2012-17) constituted by the Ministry of Housing and Urban Poverty Alleviation

(MoHUPA), there is a shortage of 18.78 million dwelling units in the country out of which nearly 96% belong to the Economically Weaker Sections (EWS) and Lower Income Group (LIG) households potentially living in slums. There are constraints and challenges both on the supply side and the demand side, which need intervention by the governments.

In context of Uttar Pradesh, though the state is considered as one of the less urbanized states of India, it has second largest urban population in the country. About 22% of the population lives in urban areas in Uttar Pradesh, which constitute more than 44 million. As per the statistics of committee on Slum Statistics/census, 2011, Government of India, about 10.8 million urban population of Uttar Pradesh is living in slums, which constitute about 24% in urban population.

In spite of various central and state government programmes implemented in the state the problem of urban poverty and slums is still prevailing on large scale. In order to resolve the problem through inclusive and in a holistic manner, the state government with the assistance of central government has adopted Rajiv Awas Yojana (RAY). The Urban Employment & Poverty Alleviation Programme Department, Govt. of Uttar Pradesh is the concerned department in the state for monitoring and implementing RAY.

1.4 SFCPoA METHODOLOGY IN KANPUR

For the preparation of Slum Free City Plan of Action, the following methodology is followed for Kanpur city.

- **Step-1:** Establishment of a slum free technical cell at the state nodal agency level for city for planning, documentation, capacity building and monitoring the POA through selection of professionals from various departments and disciplines.
- **Step-2:** Preparation of city and slum profiles involves collection of secondary information such as CARTOSAT II images and relevant slum information. Next preparation of base maps to an appropriate scale using GIS application. In addition, identification and inventory of all slum clusters along with inventory of all possible vacant lands in each zone and that could be used for slum redevelopment/ rehabilitation development purposes.
- **Step-3A:** Socio Economic Survey in slum areas: reputed NGO/CBOs were selected for conducting socio economic surveys and data validation. Identification of survey personnel from nearest slums with local knowledge and extensive training to be provided for survey personnel by the local organizations on survey formats as specified by MoHUPA.
- **Step-3B:** Preparation of GIS based maps involves mobilization of GIS team and training, acquiring Satellite images for the cities and creating geo - databases with required spatial layers such as roads, buildings, land use and capturing utilities. In addition, involves preparation of base maps, thematic maps and slum maps.
- **Step-4:** MIS & Data Entry involves collection of data of slum dwellers, compilation and collation of primary data, preparation of a robust Slum-wise, City and State Slum Survey

Database and Baseline Reports. In addition, the MIS team is responsible for identifying data gaps validation, resend them to the concerned authorities and updating the database.

- **Step-5:** Ground Mapping involves survey personnel team to map the parcels, capture utilities and updating the revised slum maps.
- **Step-6:** Verification and Validation by Independent Agency on socio-economic, spatial data and base maps on a random basis.
- **Step-7:** MIS includes Integration of Slum MIS with GIS Maps to enable the preparation of GIS-enabled MIS maps for the preparation of meaningful Slum Development Plans and Slum-free City.
- **Step-8:** Data analysis and decision for Slum Redevelopment Plan based on models like PPP development, infrastructure provision only, community-based development through involvement of the community mobilization and dialogue for deciding the model to be adopted.
- **Step-9:** Micro level planning & organizing workshops with community stakeholders for prioritization of slums and the mode of development.
- **Step-10:** Plan Preparation- Prioritization and phasing of slums and works including line estimates for 1st year slums.
- **Step-11:** ULB Approval involves prioritization and phasing of slum rehabilitation models.
- **Step-12:** Preparation of Slum-free City Plan and DPR should include strategies for the prevention of future slums, including reservation of land and housing for the urban poor. The Plan should contain timeline of activities for achieving slum-free city, phasing information and financial estimates against each of the activities.
- **Step-13:** Obtaining approvals from ULB and other concerned authorities
- **Step-14:** Obtaining approval of SLSC/SLNA/MoHUPA
- **Step 15 & 16:** Tendering process, implementation of proposals and appointing of TPIMA team
- **Step 17:** Impact Assessment
- **Step-18:** Revisions and rectifications of the strategies, reforms.

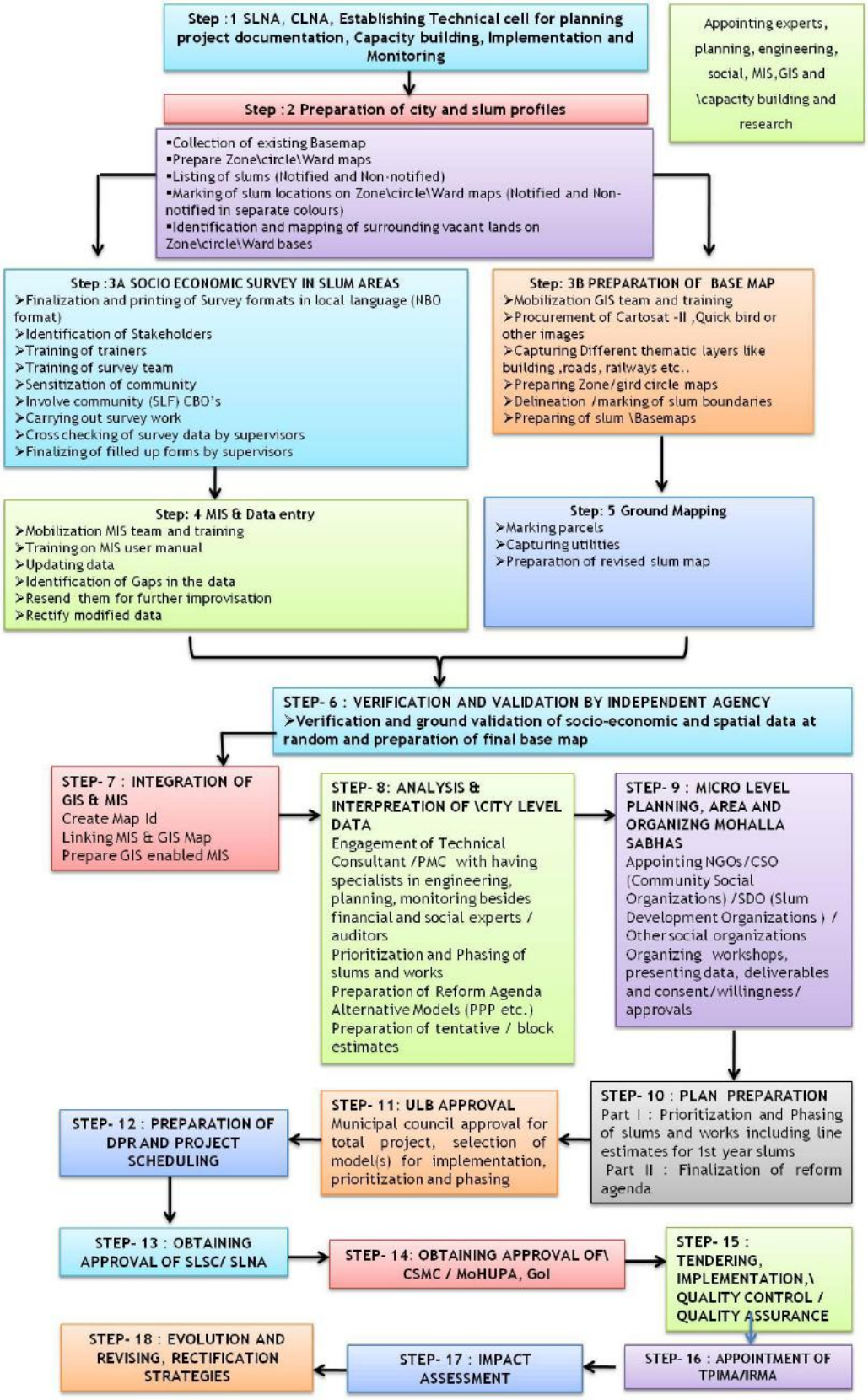


Chart 1- 1: SFCPoA Methodology for Kanpur

1.5 SURVEYS, INVESTIGATIONS & CONSULTATIONS

Listing of Surveys and Timelines (annexure)

State Urban Development Agency (SUDA) is the nodal agency to implement surveys for the scheme 'Rajiv Awas Yojana' in the State of Uttar Pradesh. As per the directions of Government of India, slum survey started in Uttar Pradesh from the year 2009. Initially the survey was taken up under USHA programme, which was having similar survey format of RAY. Various meetings were conducted by calling different para-statal agencies to discuss the required methodology for conducting surveys and initiate the steps for survey. Several discussions were held at length and depth about the conduction of surveys and to finalize a methodology. The following institutional methodology has been adopted for the state.

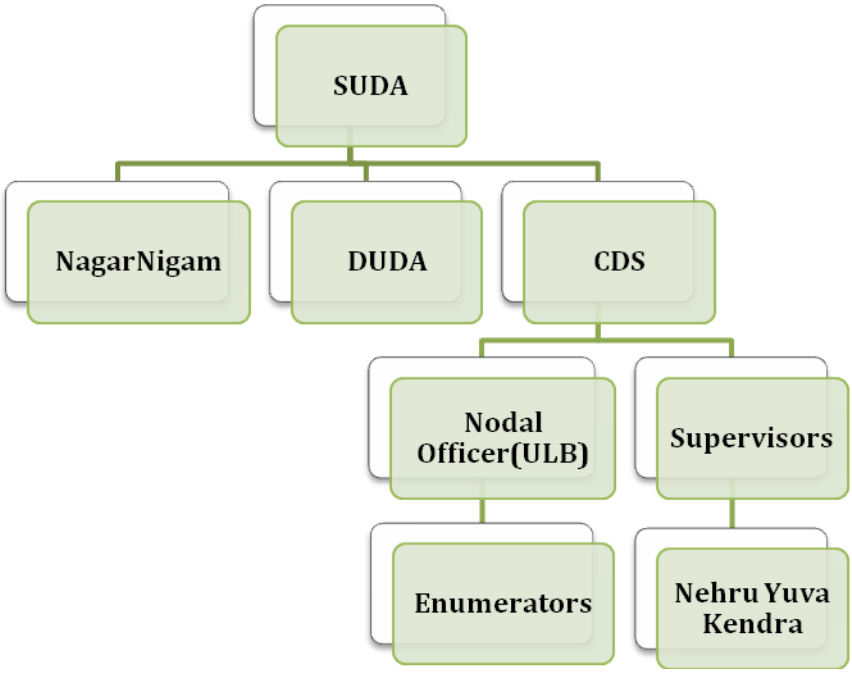


Chart 1- 2: Agencies & Stakeholders involved

Agencies (including procurement process) & Stakeholders involved

State Urban Development Agency (SUDA) as State level authority and District Urban Development Agency (DUDA) as city level authority have been the Nodal agencies to monitor the quantity and quality of surveys performed by individual cities. DUDA is headed by Project Officer (PO) who is in charge for one city, a nodal officer for a ULB and number of supervisors for quality and quantity check upon the enumerators who have done the surveys. Member of Community Development Societies (CDS), Self Help Groups constituted under SJSRY and other schemes have been involved in conducting surveys and a minimum qualification of SSC was taken as Enumerators eligibility to collect information and to fill up the survey forms. The various stakeholders involved in the process comprised of CDS, Nehru Yuva Kendra societies, NGO's working in the local areas.

a. City level Technical cell

Although the policy for appointing state and city level cell has been initiated only state level cell comprises of RAY specialists in State Urban Development Agency (SUDA), Head office, Lucknow.

District Urban Development Agency (city level RAY nodal agency) how ever is finding it tough to identify and appoint RAY specialists. The necessary support required is been hired by available qualified consultants properly monitored by the state level technical cell.

b. GIS mapping

RCUES, Hyderabad is the Nodal agency for preparation of GIS base maps for Kanpur city. RCUES, Hyderabad has collected the base maps from Uttar Pradesh State Remote Sensing Center which is prepared in the year 2008. RCUES has revised the base map and also prepared the slums level maps collecting the slum boundaries from concerned ULB staff and other NGO's. The satellite images were acquired for all cities and digitization of city and slum boundaries have been completed in RCUES, Hyderabad Urban Planning Division by in house GIS staff. The key stakeholder for the GIS map preparation would be RCUES, Hyderabad and Uttar Pradesh State Remote Sensing Center.

c. MIS

SUDA has initiated the work of MIS to UPTRON, which in turn has outsourced to Infinite systems, performed the operations of MIS. Data Entry has been done at ULB level and ported the data to the main server at CGG. A routine checkup of data has been performed and uploaded in a web tool specially prepared for RAY project. Every ULB has given a USER Name & PASSWORD to access their data from the Central Server. The front and back end of the web tool is Postgres and Java. Once the data is frozen and migrated to centralized data base at CGG, any editing of data will be done by the Project Director, DUDA in case of cities and by Commissioners in case of City Corporations.

d. Stakeholder Consultation

The various stakeholders involved along with SUDA in the process of RAY comprised of District magistrate, DUDA, Officials of Nagar Nigam, RCUES - Hyd, UP Remote Sensing Center, elected people representatives, private agencies, NHG's, NHC's, CDS ,NGO's, slum inhabitants, media and other agencies, individuals working in the local areas.

The list of slums considered for preparation of Slum Free City Plan of Action is confirmed with the DUDA, Nagar Nigam, ward corporations, NGOs at the time of carrying out primary surveys and later during consultative stakeholder workshop.

1.6 STAKEHOLDERS CONSULTATIVE WORKSHOP/MEETING

As part of preparation of Slum Free City Plan of Action (SFCPoA), a consultative stakeholder meeting/workshop in Kanpur city is held on 20th May 2013 at Hotel Landmark from 4 PM. The objective of the meeting was to discuss about the draft Plan of Action, review upon the gap assessment analysis for the city, receiving suggestions from stakeholders.

The meeting was chaired by Shri Jagath Veer Drona, Mayor of Kanpur city along with Miss Shalini Prasad, IAS, Regional Commissioner, Kanpur Region, Shri Sameer Varma, IAS, District Magistrate, Kanpur District, Shri Umakant Tripati, IAS, Commissioner Kanpur Nagar Nigam. Shri Kamal Kumar Singh, Consultant, SUDA, Lucknow, Dr.G.Vasanth Kumar, Project Coordinator, Shri M.Rama Rao, Head of Urban Planning Department along with the team of two urban planners have represented from RCUES, Hyderabad.

The key stakeholders who participated in the workshop were officials from Kanpur Nagar Nigam, District Development Authority, water supply board, ward corporators, local NGOs, various other public representatives, few slum dwellers, few residents from the city, print and electronic media representatives.

Project Director, Shri O K Singh, DUDA, Smt. Nidhi Vajpayee Project Officer, DUDA, Kanpur coordinated the consultative stakeholder meeting on behalf of SUDA.

The meeting started at 4 pm by lightening of the lamp by the dignitaries. Sri.Jagath Veer Drona, Mayor, Kanpur City in his opening remarks expressed his appreciation for the State Urban Development Authority (SUDA) for selecting Kanpur city in the first phase of RAY project and extended his appreciation for District Urban Development Authority (DUDA) for being a nodal agency to implement the programme and make the Kanpur city slum free. He also applauded DUDA, Kanpur Nagar Nigam for being accommodative and support RCUES – Hyderabad, the consulting agency being able to prepare the plan of action for the programme. He specified the role and active participation of slum dwellers would only make the slum free city a mere possibility. He expressed the wish that the project would be well executed with both stakeholder and community participation even in the later phases and make Kanpur a slum free city.

Dr.G.Vasanth Kumar, Project Co-ordinator, RCUES, Hyderabad, explained the objectives and framework of Rajiv Awas Yojana. He explained the step by step methodology followed for preparation of Slum Free City Plan of Action and also made a detailed presentation showing the existing situation of slums in the city with respect to spatial analysis, housing, physical and social infrastructure facilities.

Shri.M.Rama Rao, RCUES, Hyderabad continued the presentation by detailing the proposals and cost estimates made for Kanpur city to make it slum free. He concluded the presentation by visualizing a few sample layouts designed under Public Private Partnership mode of development to convince and convey people to agree to live in better communities comprising of needed basic services.

Shri Umakant Tripati, IAS Commissioner Kanpur Nagar Nigam in his remarks, appreciated the work done by DUDA and RCUES. He later viewed that the data regarding some parameters like household income, water supply connectivity to slum households etc., has to be re-verified according to the present day data. He stressed that the project will be successful only if the participation happens from every slum and even from every household of the slum. He discussed on the issues of land, being such an important asset for achieving better quality of life for slum dwellers.

Shri Sameer Varma, IAS, District Magistrate, Kanpur District viewed that 'Slums' generally are considered as excluded part of society, but needs to be managed to make them strong parts of city economy and wished the RAY project a great success and was confident that plan of action is certainly the necessary beginning to eradicate poverty. He asserted that any project or plan can be successful, when people own the plan and believe that it is their plan. He appreciated the initiative to conduct the stakeholder meeting, and the platform has provided a potential co-ordination required by the concerning agencies during the course of programme. He also said that the technical knowledge of RCUES, the administration of DUDA, Nagar Nigam and people knowledge and their involvement would certainly make the project successful.

Regional Commissioner, Kanpur Region, Miss Shalini Prasad, IAS viewed that Kanpur being a very old settlement and an Industrial city attracts large number of working population which in turn leads to formation of high number of slums and slum dwellers. She explained the character of slum changes from slum to slum and should be dealt respectively considering slum specific issues and requirements. She said that the slum free cities would also help and contribute towards city development. She opined that the housing requirement will depend up on the livelihood of people living in the slum and it changes from slum to slum. She quoted the example of slum dwellers depending on livestock for their livelihood, where construction of high rise structures probably will not work out. She also said that the design of 'dwelling unit' has to be discussed and finalized with the consultation of people. She said that local people has to be involved in all the steps of the plan as they understand their requirements more than anybody else. She concluded that the Draft Plan of Action should have provision for 'Relocation of Slums' and recommended for consideration of 'Relocation' mode of development for slums located on hazardous and objectionable grounds.

Smt. Nidhi Vajpayee, Project Officer, DUDA, Kanpur thanked the dignitaries for their valuable suggestions and invited the slum dwellers and citizens of Kanpur, who attended the workshop for their suggestions.

Suggestions from People attended the Meeting:

1. Display of Ward wise slum list should be made available in DUDA and Nagar Nigam offices for the reference of the people.
2. Atul Tripati, resident of ward No.11 suggested that, while carrying out surveys in the slums the ward cooporator and few residents has to be involved in the process for making the right data available.
3. Srinivas Yadav, suggested that, the aspect of livelihood has to be considered while designing housing layouts and each dwelling unit must have more than 2 rooms.
4. Open Land has to be provided in every slum layouts as the population of livestock is more in slums.
5. Shri Pasak, resident of Babanagar slum suggested that the slum level details such as area of the slum, No.of Dwelling units and their type, No.of Households, services available in slum like No.of Public taps, hand pumps, Individual taps, school, hospital, community hall etc., has to be displayed at each and every slum.
6. Babu Rao, ward corporator, 4th ward said the transit housing provided to the slum dwellers at the time of project implementation should be within a distance of less than 1 km from the slum.
7. Haziv Sohail, expressed his view that the aspect of land mafia needs to be tackled in slums.
8. Shukla, suggested that, the slums present in the surrounding village panchayats around Kanpur city should also be included in the project.
9. Smt.Neelam, resident of ward 72 said that access to water supply and sanitation are the major problems facing by the slum dwellers in the city, which needs to be facilitated in upmost priority.
10. Rajan, a local slum dweller of Kanpur city suggested that the quality of services provided has to be checked and monitored at project implementation and maintenance stage.
11. Md.Irfan, resident of Begum Purva slum said that the slums located along nallahs and low lying areas have to be relocated to the nearby tenable location.

The meeting ended with the vote of thanks proposed by Smt.Nidhi Vajpayee, Project Officer, DUDA to all the stakeholders attended the meeting.

The suggestions received in stakeholder meeting were considered and the following actions were taken:

1) The ward wise slum data has been sent to DUDA office and made available to the ward corporators and slum dwellers and people representatives for data verification.
2) A separate strategy would be adopted in dealing with the slums located on land belongs to central government, defence, railways.
3) The design plan of dwelling unit and slum layout would have to be decided with the consultation of respective slum dwellers and DUDA.

4) The selection of development model for hazardous slums and slums situated in low lying areas would have to be done with the additional consultation of respectively slum dwellers and DUDA consultation.

5) The ongoing infrastructure projects approved, in the process of implementation would be considered and integrated into the proposal of slum facilities.

CHAPTER 2 – CITY PROFILE & INSTITUTIONAL FRAMEWORK

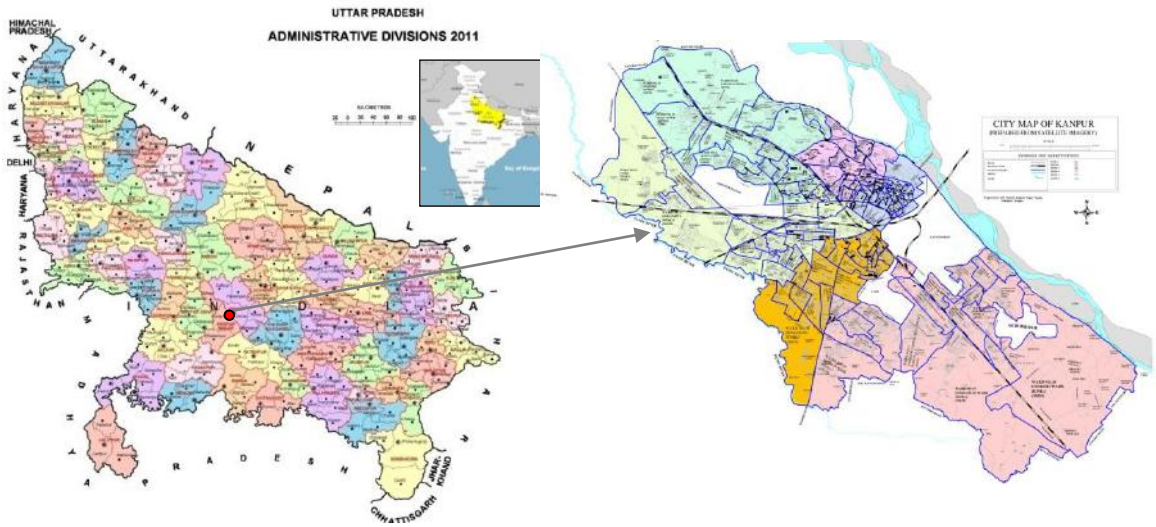
2.1 INTRODUCTION

Kanpur city is the administrative head quarters of Kanpur district and Kanpur division of Uttar Pradesh state. Kanpur is the second most populous metropolitian city in North India after the National capital Delhi. The city remains one of the oldest Industrial townshoips in India and for the same it is often refered as the Economic and Industrial Capital of Uttar Prdesh and also as Manchester of East. The city (Municipal Corporation) houses a population of 27,67,031 according to census,2011. For administrative purpose the city is divided into 6 zones and 110 wards.

2.2 PHYSICAL CHARACTERISTICS OF THE CITY

2.2.1 Location

Kanpur city is situated on the banks of river Ganga on its north-east and Pandu River (Yamuna) on its south. The city lies on the geographical coordinates of 25°26' and 26°58'North Latitude and 79°31' and 80°34' East Longitude.



Picture 2- 1 : Location of Kanpur city in Uttar Pradesh state

2.2.2 Topography

Kanpur city lies on the right bank of river Ganga, elevated at an average altitude of 125 metres above the sea level. The situation of the city at high altitude is the reason that the city never flooded. The extension of buildup area in all the directions has greatly modified the topographical features of the city. The levee[1] of the river runs parallel to the river of one kilometer in the south with an average elevation of about 125 metres from sea level, its width varying from 200 mts near the parade market in the south east to 1.5 kms in the north-west.

[1] an embankment alongside a river, produced naturally by sedimentation or constructed by man to prevent flooding- as defined in Earth Sciences/ Physical Geography terms

The little elevated central part of the city is a well drained zone covering an area of 40 Sq.Km. Behind the levee, the land gradually lowers towards the Pandu River to 120 meters about the sea level. The city falls under Seismic Zone-III [2] termed as moderate damage risk zone.

Picture 2- 2 : The Bank of River Ganges at Kanpur

Picture 2- 3 : View of River Ganges from Kanpur Railway bridge

2.2.3 Climate

Kanpur, lying at the centre of Ganga Plain, at a distance of about 800 Kms from the nearest sea coast enjoys the sub-tropical monsoon climate. The winter season commences from October to January, the average temperature remaining 18°C.Humidity in the months of December and Janauary remains as high as 70 percent. From the beginning of the March, the temperature starts rising and the maximum would be reached by May with 48°C. The average summer temperature in Kanpur remains 40°C. Rains appear between the months of July to September. Kanpur receives more than 74 percent of its rainfall in these four months.

2.2.4 Regional Setting & Connectivity

Kanpur, standing on the right bank of river Ganga lies at a distance of about 1000 kms from Kolkata in the east, 425 kms from Delhi in the west, between the Himalayan arc in the north (with in 160 kms) and the Deccan Plateau in the south (with in 60 kms). The city is located at the distance of 79 km from Lucknow, 193 km from Allahabad, 329 km from Varanasi, 269 km Agra and 222 Kms from Jhansi.

Kanpur being a major Industrial city in India, it is well connected to other areas of state and country by road and rail. The city has many important high ways passing through Kanpur. The National Highway (NH) 2 connecting Delhi to Dankuni (near Kolkata) via Agra, Allahabad, Varanasi, Barhi passes through the city. The NH 25 connecting Lucknow to Shivpuri via Jhansi passes through the city. The NH 86 connecting Kanpur to Bhopal and Indore and NH 91 connecting the city to Ghaziabad via Aligarh and Kannauj are the other major Highways in the city. The city has the Inter State Bus Station (ISBT) officially named as “Shaheed Major Salman Khan Bus Station” providing busses to important cities within and outside the state like Delhi, Jaipur, Gwalior, Bharatpur etc.

[2] The Bureau of Indian Standards delineates India in to four seismic zones, where the areas fall under Zone-II are said to be least active to earth quakes where as Zone-V is the highest seismic zone vulnerable to earth quakes.

Kanpur Central is the main railway station of Kanpur and is the largest railway station of North Central Railways. Kanpur Central lies as one of the most important railway stations on Delhi-Howrah Trunk Line of Indian Railways. Kanpur is connected by train to all the major cities of India like Delhi, Mumbai, Kolkata, Hyderabad, Bengaluru, Chennai, Lucknow, Ahmedabad, Raipur, Bhopal, Pune, Surat, Nagpur, Indore etc. A part from the main railway station, the city has eighteen railway stations at different parts of the city which are well connected to the sub urban areas of the city.

There are three airports within the city limit namely-Kanpur Airport, Kanpur Civil Airport and IIT Kanpur Airport (private airport under the Aerospace Engineering department). Kanpur Airport is a main airport in the city which is majorly designated for Indian Air Force in year 1970. The Airport has re-opened in December 2004 and since the domestic flights are operated regularly to Delhi, Ahmedabad, Allahabad, Mumbai Kolkata, Bengaluru, Chennai and Pune. The major International airport in the vicinity is Lucknow International Airport which is around 80 km from Kanpur. An international airport named as Captain Lakshmi Sehgal International Airport is under proposal in the city.

The kanpur district is surrounded on the eastern side by District Barabanki, on the western side by district Unnao, on the southern side by Raebareli and on the northern side by Sitapur and Hardoi districts. Kanpur is well connected to the other parts of state and country through rail and road.

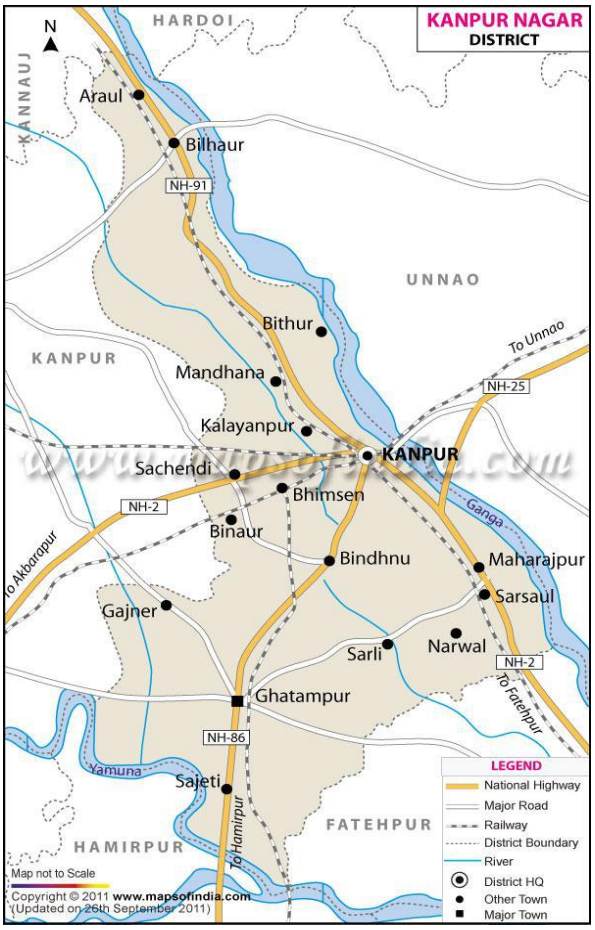
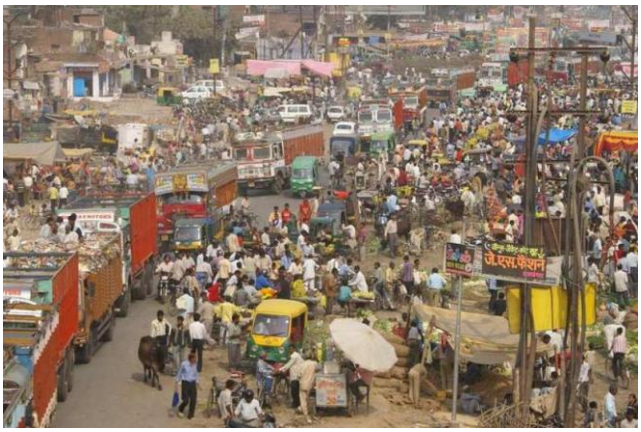


Image source: Maps of India.com

Picture 2- 4 : Location of Kanpur city and its connectivity in of Kanpur Nagar District

Picture 2- 5 : Kanpur Central Railway Station



Picture 2- 6 : National Highway passing through Kanpur city

2.2.5 History

It is believed that the name is derived from Karnapur and is associated with Karna, one of the heroes of Mahabharata. Duryodhana made Karna a king, seeing him as a fitting match to Arjuna, and gifted him this area; hence the name Karnapur, which later became Kanpur.Till the 1st half of the 18th century, Kanpur continued to survive as a collection of several small military villages.

In May 1765, Shuja-ud-Daula, the Nawab Wazir of Awadh, was defeated by Britishers near Jajmau. It was probably then that strategic importance of Kanpur was realized by the Britishers, who also gave a new name to this place as Cawnpoor in 1770. After with the advancements and establishments of European businessmen, the city emerged with various names and cultures.

Kanpur came under the British Rule by the treaty of 1801 with Nawab Saadat Ali Khan of Awadh. In the meanwhile, it got a new name by Britishers as 'Caunpour' in 1776. This forms a turning point in the history of Kanpur.

The first two spellings were changed to Caunpore and Cawnpour in 1785 and 1788 respectively. Cawnpore was the name given to the city by Britishers in 1788. Soon after this, Kanpur became one of the most important military stations of British India with a new name as Kawnpore in 1790. After this, the city witnessed many changes in its name, geographical area and culture. Later, Cawnpore was declared as a district on March 24,1803 at that time it was named as Khanpore. The spelling of the city was changed 11 time before Independence.

After 1857, the development of Kannpur (present Kanpur) was even more phenomenal. The city was abbreviated with Caawnpore in 1879, which after several spelling changes becomes Kanpur.

2.2.6 Development of Industries

After 1857 the city became an important center of the leather and textile industries. Government Harness and Saddler Factory was started for supplying leather material for army in 1860, followed by Cooper Allen & Co. in 1880. The first cotton textile mill, the Elgin Mills were started in 1862 and Moiré Mills in 1882. The British India Corporation (BIC) was headquartered here and led the development of many industries. The first Indian business house of Cawnpore was the firm NihalChand KishoriLal which set up a trading facility in 1857. This firm was a leader in Oil milling and had many oil mills spread across North India. The Juggilal Kamlapat Singhania family launched many industrial units between 1930 and 1970. The group is known as J K Group of Industries till date. The Jaipuria family contributed to the patriotic cause, by building the Swadeshi Cotton Mills in response to charges that the foreign rulers were raiding India of its cotton only to sell back textiles to the residents. Kanpur was known as the "Manchester of India" during the 20th Century. The NihalChand KishoriLal group (also knows as Kejriwal Group) over time diversified into flour milling, tea plantations and steel. They bought over in 1942 Cawnpore Flour Mills which had been established in 1886 by Edward Foy a Scotsman. New Cawnpore Flour Mills is at present one of the larger flour mills of North India and still managed by the same family. The steel industry was first brought to Kanpur by Singh Engineering and grew with JK Steel and the many ordanance factories which were set up. The Kejriwal's set up a ministeel mill on the outskirts of Kanpur which is now a leading long products manufacturer. Kanpur is also an important center for India's leather industry with

numerous leading manufacturers, situated in the Jajmau Leather Industrial hub, which is exported worldwide. It is supposed to be the largest Sugar market in entire North India. As of now, the city also owns many leather tanneries, a 2-wheeler factory owned by LML India, under collaboration with Italy's Piaggio; and over a dozen Defence Ordnance Factories such as Small-Arms Factory, Ordnance Parachute Factory etc. It is also home to the pan masala and gutkha industry.

Many of the British contributed vigorously to charitable causes in the city by building the Ursula Horsemann Hospital, the "Hallet" Hospital, Harcourt Butler Technological Institute (HBTI), by protecting the Allen Forest (now a Zoo) and many other efforts. Most of these are now renamed, though a lot of residents still call them by their old names. The distortion of names is most visible at the railway crossing bridge next to the Railway Station, where the now-closed Murray Company is conveniently called Mari (Dead) Company.

2.3 SOCIAL AND DEMOGRAPHIC PROFILE

Picture 2- 7 : A view of Lal Imli building

Picture 2- 8 : HBTI administration building

2.3.1 City Population

The population of Kanpur city (Nagar Nigam) as per 2011 census is 27,67,031 out of which male and female are 15,02,370 and 12,64,661 respectively. Considering the population statistics from the last century, the city faced a decrease in population in the decade 1911-1921 and thereafter the decadal population increased successively. The decade 1931-1941 showed an increase in the decadal rate of 106.44 due to the reasons of expansion of city area limit. The decal population growth rate in 2001-11 is 8.26 percent recording lowest growth rate for the last 7 decades. The population of children (0-6 yrs) as on 2011in Kanpur is 2, 51,127 which constitutes about 9 percent of total population.

Table 2- 1: Decadal growth trend of Kanpur city population

Census Year	Population	Decadal Population Increase (In No.)	Decadal Population growth rate (in Percentage)
1901	202797		
1911	178557	-24240	-11.95
1921	216436	37879	21.21
1931	219189	2753	1.27
1941	452495	233306	106.44
1951	638734	186239	41.16
1961	883815	245081	38.37
1971	1158321	274506	31.06
1981	1486522	328201	28.33
1991	1879420	392898	26.43
2001	2555811	676391	35.99
2011	2767031	211220	8.26

Source: Census of India

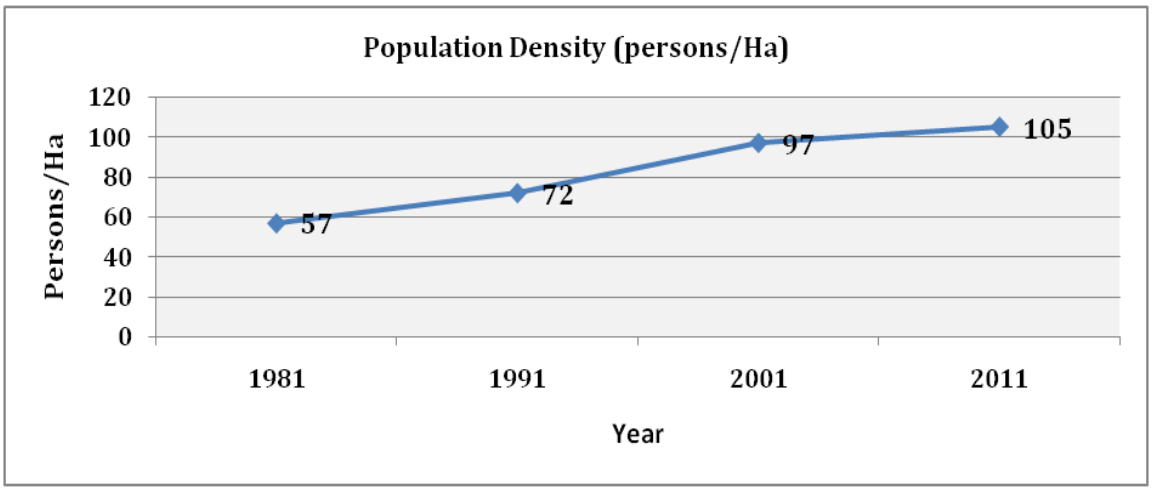
2.3.2 Slum Population

The Kanpur city is having a total of 412 slums in its municipal judistriction area. Out of which 101 are notified slums and 311 are non-notified slums.

The National Building Organization (NBO) Annexure primary survey is carried out in January, 2011 for all 412 slums in the city. The total slum population in the city is 714027 which constitute about 26% of city population. The total number of slum households in the city is 152124 which constitute about 30% of total city households.

2.3.3 Population Density

The judistrictional area of Kanpur Nagar Palika is 26223 Hectares (262.23 Sq.Km). As on census 1981 the population density of the city was 57 persons per hectare and it increased to 72 persons per hectare in 1991.In the year 2001 the population density of the city is 97 persons per Hectare and it increased to 105 persons per hectare in year 2011.



Source: Cenus of India

Figure 2- 1: Decadal Population Density

2.3.4 Sex Ratio & Literacy

As per census 2011 the sex ratio in Kanpur stood at 842 female per every 1000 male which is relatively very low compared to average of urban areas in the country i.e., 926. In education, total literates in Kanpur city are 2,116,973 of which 1,172,323 are males while 944,650 are females. Average literacy rate of Kanpur city is 84.14 percent of which male and female literacy was 85.77 and 82.21 percent.

In slums, the average literacy rate is 76%, as per Annexure 1 data, where as it is 59% in 2001. There is an increase in literacy rate among slum dwellers compared to last decade.

Table 2- 2: Physical & Demographic profile of Kanpur city

PARAMETER	UNIT	
Area (Kanpur Nagar Nigam)	Ha.	26223
Zones	No.	6
Municipal wards	No.	110
Population (2011 census)	No.	27,67,031
Households	In Lakhs	5.03
Average Household size	No.	5.5
Literacy rate (2011 census)	%	84.14
Sex Ratio (2011 census)	No.	842
Slum Settlements	No.	412
Slum area	Ha	1274.71
Percentage of slum area to total area	%	5
Slum Population	No.	7,14,027
Percentage of slum population to total population	%	26
Slum Households	No.	1,52,124
Average Household size	No.	5

Source: Census of India – 2001, 2011, RAY primary survey, 2011

2.3.5 Population Projection

The Kanpur city along with the status of administrative head quarters of Kanpur division and the district, it is a major Industrial centre in North India. From the last century, the population of the city increased from 6, 38,734 in 1951 to 27, 67,031 in 2011 with an average decadal growth rate of 28 percent. The city experienced an average decadal growth rate of 24 percent in the last three decades (1991 to 2011).

In view of the population growth rate of last three decades, the population projections were drawn for the next 15 years using geometric mean method. It is projected that by the year 2016 the population of the city would be 30, 47,976 by the year 2021 it would be 33, 57,447 and 2026 the projected population of the city is 36, 98,339.

Table 2- 3: Population projection for Kanpur city

Year	1991	2001	2011	2016*	2021*	2026*
Population	1879420	2555811	2767031	3047976	3357447	3698339

Source: Census of India, * - Projected Population

2.4 ECONOMIC PROFILE

2.4.1 City Economic Base

Kanpur city from traditional times has been one of the major Industrial cities in India. In the British times, due to large number of cotton textile units and a major trade center for cotton and it was also called as "Manchester of India".

At present, Kanpur has mostly industries relating to leather shoe making and cotton textiles. Other factories include manufacture silk, woolen and jute textiles, food products, fire-bricks, fertilizers, railway wagons, textile machinery, television sets, metal ware, leather goods, soap, tents, durries, fountain pens, hosiery, cutlery, television picture tubes etc.

Kanpur was also infamous to a certain extent for being home to largest tanneries in India and the subsequent pollution they caused thereof. At Kanpur due to heavy influx of industrial waste and city sewage the quality of River Ganga flowing in the city drops down to a unfit for human stage. However owing to poor pollution record, lack of technologies and emergence of other avenues of employment has led to a slow and gradual death to tanning units.

2.4.2 Distribution of Working Population in different sectors of Economy

According to 1991 census, the main workers population in the city is 640827 which constituted 34 percent of city population and in 2001 it was 1040278 which are about 40.7 percent of city population. The working population in the city has increased nearly 7 percent in the decade. As on census 2001, about 3.58 percent of the working population is engaged in primary sector, 26 percent in secondary sector and 70.34 percent in service or territory sector.

The Kanpur Master Plan projected that by the year 2021, 3.2 percent of the city population would depend on primary sector, 26.15 percent population in secondary sector activities and about 70.65 percent in service or territory sector.

2.5 HOUSING PROFILE

2.5.1 Housing Stock

As on year 2011, the city is having a total of 4.7 lakh households. The household density is higher in the core area of the city, where mixed type of land use can be found where in majority of cases ground floor is kept under commercial use and upper floors under residential use. The average household size of the city as per 2011 census is 6. In 2001, the city has 4, 39,619 households with average household size of 6 persons.

2.5.2 Housing Projection & Shortage

At an average household size of 6 persons and assuming 2% as dilapidation rate per decade, the projected housing requirement for Kanpur city for the year 2016 would be 513076; in 2021 it would be 565170 and 622554 in the year 2026.

The housing shortage for the city is calculated based on census data, estimations and assumptions pertaining to existing housing stock in the city, dilapidated housing structures, vacant houses, slum households. The housing shortage for the city is estimated for the next 15 years under two circumstances a) taking into account the existing slum household stock and assuming they will remain same in future b) assuming that all the existing slum households are developed into a decent affordable housing under RAY and other slum development programmes. The Housing requirement and shortage projections for the city is shown in *Table 2-4.*

Table 2- 4 : Projection of Housing & Housing shortage in Kanpur city

Year	2016	2021	2026
Projected Housing	513076	565170	622554
Housing Shortage*	220747	272841	330225
Housing Shortage**	--	120717	178101

Note: * - Estimated housing shortage of the city if existing slums in the city are not improved in the city, ** - Estimated housing shortage, considering that all the slums in the city are improved under slum developed programmes like RAY

2.5.3 EWS/LIG Housing

Working towards slum free Kanpur city, there is a need to build up EWS and LIG housing stock. EWS housing are meant for people whose annual income is below Rs 60, 000 while LIG housing are meant for people whose annual income is less than Rs 1,20,000.

Most BPL/EWS and LIG households in cities live in informal settlements/slums on encroached public lands. There is no data on numbers of poor families without adequate housing in cities. Census of India provides estimates of number of poor in each city and they also project future population growth for cities using an urban growth rate. City Master Plans etc. make estimates on housing demand on the basis of Census information. Considering the past census data and development plans of the city it is assumed that 25% of the Kanpur households belongs to either EWS or LIG population.

In Kanpur city Slums, 31% of the slum households are living under below poverty line (BPL), which accounts 10% of the total city households. Assuming the other 10% of the households live in other parts of the city, the EWS/LIG housing projections are calculated for the next 15 – 20 years.

Table 2- 5: Future Housing projection pertaining to EWS/LIG

Year	2016	2021	2026
EWS/LIG Housing	128269	141293	155639

By developing slum settlements under the Rajiv Awas Yojana scheme, the housing problem for EWS/LIG population living in slums would be expected to tackle in the next 5 years. The mandatory reform under JnNURM targeting urban poor "Earmark at least 20-25 percent of developed land in all housing projects (developed by public and private agencies) for Economically Weaker Section (EWS) and Lower Income Group (LIG) category with a system of cross subsidization."

And as per the Housing policy framed in 2010, all government, private and cooperative housing schemes above 3,000 square metre in area are mandated to allocate 10% units each to LIG (lower income group) and EWS (economically weaker section). This prompts any developer to keep a total of 20% land area reserved for these units; up on which layout plan would be approved by the development authority.

On strict implementation of the above mentioned reforms of JnNURM and Housing Policy would solve the existing and future EWS/LIG housing in the city.

2.6 CITY GROWTH PATTERN

2.6.1 Land Use

The process of planned development for Kanpur city was started way back in 1943 when Kanpur Development Board has prepared the first development plan. With the change in socio - economic situation over a period of time, the need was felt to make changes in the old master plan. In 1962, responsibility of preparation of new master plan has been assigned to Town and Country Planning Department, Uttar Pradesh for Kanpur development area falling under Kanpur Development board and Kanpur Development Parishad area which was declared planned area as per the government order of U.P. (Regulations of Building Operation) Act 1958 (U.P. Act No. 34 of 1958). This Master Plan of Kanpur recognized the functional characteristic of Kanpur as an industrial and commercial town of Uttar Pradesh.

Kanpur city has grown from an area of 8236 hectare in 1946 to 29670 hectare in 1962 which includes the cantonment area. In 1962, it was spread from Beri Akbarpur in west to Ruma in east and from Ganga River in north to Pandu River in south. As per Master plan 1991, in 1962 out of total 29,670 hectare, 8863.5 hectare (29.9%) was developed land and rest 18235.7 hectare (61.5%) was agricultural land, 2570.8 hectare (8.6%) was open land. In 1997- 98, total metropolitan region area has increased to 89131.15 hectare out of which 4,743.9 hectare (5.31 %) was non-defined (prohibited area) and rest 29,683 hectare and 54,704 hectare (61.39%) was urban and rural area respectively.

Over a period of time, Kanpur has developed linearly from east to west along Ganga River and G.T road. The Central Business District (inner city) is located in the north central part. It is heavily built up and characterized by mixed commercial and transport related activities. The public, semi-public, residential and other land use activities have been mostly concentrated in the west. Due to physical constraints of river in the north and cantonment in the east, industrial concentration followed western/ southern expansion. (Source: City Development Plan)

The land use statistics of Kanpur Urban Agglomeration (UA) in the year 1974 and 1997 reveals that Kanpur has very low percentage of area under Residential use of land compared to other cities in India of similar scale with respect to area and population. The percentage of area under Residential land use is only 4.93 percent in 1974 where it increased to 26.69 percent in 1997. The area under administrative offices is reduced from 324.90 Hectares in 1974 to 298.62 in 1997. In the year 1997 about 1452.82 Hectares of the area is under Transportation and 959.08 hectares of area i.e., 3.23 percent of total area is under parks and play ground. The area under Agricultural Green Belt constitutes 52.82 percent of total urban agglomeration area. The detailed land use statistics were tabulated in the *Table 2-6.*

Table 2- 6 : Land Use of Kanpur Urban Agglomeration – Year 1974 & 1997-98

S.No	PARAMETER	YEAR 1974		YEAR 1997-98	
	Land Use Category	Area (Ha.)	%	Area (Ha.)	%
1	Residential	101.99	4.93	8813.38	29.69
2	Commercial	181.59	8.78	460.35	1.55
3	Industrial	453.98	21.96	970.42	3.27
4	Public & Semi Public services	241.96	11.70	966.55	3.26
5	Administrative Offices	324.90	15.72	298.62	1.01
6	Parks & Playground	259.0	12.53	959.08	3.23
7	Transportation	186.18	9.01	1452.85	4.89
8	Water Bodies	-	-	82.60	0.28
9	Agriculture/Agricultural Green Belt	90.13	4.36	15679.15	52.82
10	Open Area/Forest	227.54	11.01	-	-
	Total	2067.27	100.00	29683.00	100.00

Source: Master Plan 2021

2.6.2 Development/ Master Plan Initiatives for Kanpur City

The Development Plan for Kanpur city has been prepared by Kanpur Development Board in the year 1943. Kanpur Master Plan (1968-91) has been prepared by Town and Country Planning Department, Uttar Pradesh for 21 lakh population and has been passed in 1970. After the establishment of Kanpur Development Authority in 1974, planning as per master plan has started taking place. The Master Plan was prepared for 29670 hectare to cater the population of 10 lakhs. The plan has proposed the strengthening of existing commercial centre, shifting of non confirming industries towards the eastern and western parts of the city, higher education facilities in the western side, provision for big recreational centres near the Pandu River and on open spaces near Ganga River, dairy farming on green belt and rural areas, construction of new roads as well as widening of existing road network, construction of bypass to ease traffic movement in the city, construction of bridges across the river Ganga and planned development of identified few ring towns, higher density of residential development within the municipal boundary and arrangements of services like water supply, sewerage, drainage, etc.

2.6.3 Master Plan 2021

In order to correct the imbalances of the past development and to promote systematic and planned development of the city, the Kanpur Master plan is revised for 2021 consideration the requirements of revised population of 45.0 Lac projected for 2021. The Town and Country Planning Department (TCPD) of Uttar Pradesh has revised the Master Plan.

The master plan added 33700 hectare land for future growth of the city. It proposed to reserve 14043 hectares of land, which is 41.67 percentage of proposed area, for accommodating about 45.0 lakh population projected for 2021. A gross residential density of 300 persons per hectares is prescribed in the master plan. The entire city was divided into Planning Districts in order to provide all types of facilities to the proposed population assigned to each District. The Master Plan proposed integration of all the schemes under the housing board with the schemes already under the KDA, provision for inner and outer ring road for improved circulation, provision for new truck and bus terminals, grain and vegetable markets, new colonies proposed in close proximity to commercial hub to decongest the inner core city. The proposed land use for Kanpur is given in *Table 2-7.*

Table 2- 7 : Proposed Land Use for Kanpur Urban Agglomeration (UA), 2021

S.No	PARAMETER	YEAR 2021	
	Land Use	Area (Ha.)	%
1	Residential	13575	41.37
2	Commercial	971	2.96
3	Trade	1121	3.42
4	Public and Semi Public	1752	5.34
5	Industrial	2949	8.99
6	Offices	98	0.30
7	Recreational	6847	20.87
8	Transportation	5000	15.24
9	Others	495	1.51
	Total	32808.00	100.00

Source: Master Plan 2021, City Development Plan

2.7 INFRASTRUCTURE

2.7.1 Water Supply

The major source of water supply to the city is through River Ganga and Ground water (through tube wells) is also supplied to some parts of the city. The Ganga Barrage inaugurated in May 2000 with a raw water intake capacity of 1600 MLD is the major source for the city (the present installed capacity is only 200 mld of water treatment). In some parts of the city the residents were also depend upon hand pumps and tube wells. The Kanpur Jal Sansthan (KJS) constituted in 1975 as a parastatal body under the Uttar Pradesh Water Supply and Sewerage Act is responsible for operation and maintenance of water supply and sewerage system in the city.

The total water supply requirement for the city is 600 mld (both for domestic and indusrial purpose) but only 385 mld of potable water is being supplied. The total supply from treatment plants is about 255 mld water (210 mld raw water from Bhaironghat pumping station and 45 mld from Lower Ganga Canal) and approximately 130 mld water is drawn from groundwater comprising of 80 mld from tube wells (about 135) and 50 mld from hand pumps (about 9830), thereby making a total present water supply of 385 mld. In addition, there is large number of private bore wells in residential and industrial areas. The supply of surface water from different intakes is being treated at the Benajhabar Treatment Works from where it is supplied to 28 zonal pumping stations. From these Zonal Pumping Stations water is further distributed to the different localities of the city.

As per the City Development plan of Kanpur city, 80 percent of the city area is covered with water distribution network and out of 4.2 lakh properties in Kanpur city only 1.8 lakh properties are having water supply connections (as on year 2006). With the present supply of 385 mld the per capita supply for the population of 27.67 lakhs (2011 census) would be about 139 lpcd which is comparatively less than the prescribed standard of 150 lpcd. Further it is estimated that about 30 percentage of water get wasted due to leakage.

2.7.2 Sewerage

In Kanpur the Sewerage network was laid in the year 1904 in some parts of the city. In 1920, it was extended to cover more areas by providing trunk, main and branch sewers. In 1952, Kanpur development Board implemented complete reorganization of sewerage system for a population of 9.5 lakh which was designed to carry sewer at the rate of 180 lpcd. As on year 2006, the total length of main and trunk sewers is 74 kms whereas branch sewer lines are 875 kms. Only 60 percent of city is covered with sewerage system. The sewerage system is being administered under five different zones. In the city there are three sewerage plants (STPs), 13 sewage pumping stations and 30,000 manholes. All three sewerage plants are located in area near Jajmau, on the eastern side of the city. In Jajmau, main sewage pumping station and treatment plants for 171 mld capacity have been commissioned in the last decade.

The source of sewer is mostly from domestic households but the waste generated from industries also flow into sewers. The present arrangements segregate industrial effluents from domestic sewerage for sewerage treatment plants. The industrial units in Panki and Dada Nagar industrial area also discharge industrial effluents, which finally flows in River Pandu through three Nalas, flowing north to South in South of Kanpur city. In Jajmau area, cluster of tanneries are discharging effluents, which has been tapped for treatment under Ganga Action Plan Phase - I. Except for primary treatment plants, which the industries in the Jajmau areas claim to have installed, the sewage flowing in three Nalas (Ganda Nala, Halwa Khanda Nala and COD Nala) gets discharged in Pandu River without any treatment.

2.7.3 Storm Water Drainage System

Kanpur city is habituated between two rivers Ganges on north and Pandu River on south. Out of 17 nalas in the city, 14 are discharging about 154 mld of wastewater in Ganga River towards North with a total length of about 34.82 Km. Towards South, 3 nalas are discharging about 75

mld of waste water in pandu river with a total length of 26.40 km. Out of all Nala, Sisamau Nala directed towards Ganga River has the biggest catchments area of 1985 hectares.

2.7.4 Solid Waste Management

Kanpur Nagar Nigam (KNN) is responsible for collecting, transporting and disposing of the solid waste generated in the city, estimated at about 1500 tonnes per day. There were numerous collection centres in the city, more than 480 of which were open dumps. A fleet of 132 vehicles and 3000 safai karmacharis were supposed to collect and transport the city garbage and dump it at an authorised site located few kilometres away from the city. Apart from the domestic waste generated from households Kanpur has has a number of industries and other businesses that generate different type of waste such as biomedical waste, sludge, buffing and other waste produced by tanneries in Jajmau area, industrial waste produced by textile, rubber and other industries operating in the city etc.

Municipal Solid Waste in Kanpur City is collected by private workers and/ or households and dumped in dustbins or secondary collection points. As informed in City Sanitation Plan, In most part of Kanpur city where lower income group and middle income group families are living, the waste collection systems are not very effective. Generally residents throw the waste on the streets and this is piled and collected while road sweeping. Due to this practice most of the waste goes into the drains causing chocking and overflow problems during monsoon. Street sweeping/waste collection and cleaning of drains starts from 6 am till 12 noon. In HIG colonies there are private operators/NGO's engaged in DTD waste collection. There the door to door collection is only 10 percent.

The main issues are outdated equipment causing unreliable service, inadequate bins, no segregation of waste and proper composting/SWM disposal arrangement, non-operative treatment facilities of tannery waste.

2.7.5 Traffic and Transportation

Kanpur has a radial pattern of network, which include two National Highways namely, NH-25 (Kanpur-Lucknow Road) and NH-2 connecting Kanpur to Kolkata in East and Kanpur to Delhi in the North. G.T. road, Hamirpur road and bye pass roads are other major arterial roads in the city. Parwathy Bangla Road, Mall Road, Dad Nagger Road, Jawahar Road, Eye Hospital Road, Prithviraj Chauhan Road and Panki Road are some of the major sub-arterials roads within the city.

Kanpur is facing the problem of regulating inter-city traffic together with the city traffic. The railway network passing through the city has resulted in a large number (16) of rail level crossings. The congestion is evident all along the G.T. Road and at all those places where the railway network cuts the road network. In the past, some remedial measures were exercised by constructing Roads Over Bridges and a by-pass on the southern end of the city to ease the traffic congestion. The spurt in city population and motorized vehicles has compounded the problem further. The long queues of traffic leading to congestion and traffic jams are some of the major problems.

For Public transportation, the city is predominantly dependent upon private buses and tempos for the intra-city passenger travel. There are approximately 100 buses run by U.P.S.R.T.C, about 100 private buses and more than 5000 auto rickshaws and tempos plying in the city. The city is having about 10,000 cycle rickshaws which are the preferred mode of transport for short distance travelling.

2.7.6 Education & Health

Kanpur homes several prominent educational institutionsThe world renowned institute in the field of science and technology IIT Kanpur, established in 1959, is situated on Grand Trunk Road. Harcourt Butler Technological Institute (HBTI) is Kanpur's oldest technical institute situated in Nawabganj. The Ganesh Shankar Vidyarthi Memorial Medical College, University Institute of Engineering and Technology, Kanpur University, Chandra Shekhar Azad University of Agriculture and Technology, Uttar Pradesh Textile Technology Institute, Government Leather Institute formerly known as Government Leather Working School, Indian Institute of Pulses Research, National Sugar Institute, Institute of Productivity & Management, Government Polytechnic, Brahmanand Degree College, vssd Degree College, PPN Degree College, DAV Degree College, Halim Muslim Degree College, BNSD College, Christ Church College are some of the popular educational institutions of Kanpur city. There are more than 70 Agricultural, Degree, Engineering, Management and Medical colleges in Kanpur. Also in the city we have Central India Regional Council of Institute of Chartered Accountants of India. Apart from these there are various renowned schools.

Kanpur being a major city in the state and the administrative head quarters of the district, it has many hospitals and medical institutions run by state government as well as the private. The GVSM medical colleges, Lala Lajpat Rai Hospital, Dr.Jawaharlal Rohatgi Smarak Netra Chikitsalaya are few famous hospitals in the city.

Picture 2- 9 : Ganesh Shankar Vidyarthi Memorial College, Kanpur

Picture 2- 10 : Indian Institute of Technology, Kanpur

Table 2- 8: Service Level Benchmark for Water Supply, Sewerage and Solid waste management– Kanpur city, 2010-11

S.No	Indicator	Target Benchmark	SLB 2011-12
1	**WATER SUPPLY INDICATORS**		
a	Coverage of water supply connections	100%	40.5
b	Per capita available of water at consumer end	Lpcd	74.9
c	Extent of metering of water connections	100%	NA
d	Extent of Non Revenue Water	20%	NA
e	Continuity of water supply	24x7	NA
f	Efficiency in redressal of customer complaints	80%	NA
g	Quality of water supplied	100%	99.2
h	Cost recovery in water supply services	100%	84.21
i	Efficiency in collection of water supply related charges	90%	74.77
2	**WASTE WATER MANAGEMENT (SEWERAGE AND SANITATION) INDICATORS**		
a	Coverage of Toilets	100%	59
b	Coverage of wastewater network services	100%	60
c	Collection efficiency of wastewater networks	100%	40.29
d	Adequacy of wastewater treatment capacity	100%	92.8
e	Extent of reuse and recycling of treated wastewater	20%	100%
f	Quality of wastewater treatment	100%	72.92
g	Efficiency in redressal of customer complaints	80%	93.12
h	Extent of cost recovery in wastewater management	100%	40.4
i	Efficiency in collection of sewerage charges	90%	68.6
3	**SOLID WASTE MANAGEMENT INDICATORS**		
a	Household level coverage of solid waste management services	100%	10
b	Efficiency of collection of municipal solid waste	100%	43.55
c	Extent of segregation of municipal solid waste	100%	NA
d	Extent of municipal solid waste recovered	80%	NA
e	Extent of scientific disposal of municipal solid waste	100%	NA
f	Extent of cost recovery in solid waste management services	100%	56.5
g	Efficiency in collection of solid waste management charges	90%	88.6
h	Efficiency in redressal of customer complaints	80%	NA
4	**STORM WATER MANAGEMENT INDICATORS**		
a	Coverage of Storm Water Drainage Network	100%	55
b	Incidence of water logging/flooding	0 Number	45

Source: City Sanitation Plan

2.8 KANPUR INSTITUTIONAL SETUP

Kanpur city, with in a judistriction of 26223 Ha (262.23 sq.km) of area, housing a population of 27,67,031 (as per 2011 census) is a Municipal Corporation administered by Kanpur Nagar Nigam (LNN). The Kanpur Nagar Nigam was formed in 1959 following the enactment of the UP Municipal corporation Act. The administration is headed by an Executive officer as Commissioner of Municipal administration.The Municipal comissioner is most often an IAS officer.The Governing body or elected wing of Kanpur Nagar Nigam consists of a Mayor and 110 ward corporators. The present Mayor of Kanpur Nagar Nigam is Shri Jagath Veer Drona.

The Kanpur Development Authority (KDA) established in 1974 is responsible for the preparation and revision of master plan, development of new areas as well as provision of housing, zoning of the city, monitoring the orderly development of Kanpur Planned area, which covers an area more than 300 Sq.Kms

The Kanpur Jal Sansthan established in 1976 is responsible for operation and maintenance of water supply and sewerage assets, collection of tariff. The Power supply to the city is done by the Uttar Pradesh Power Corporation Limited (UPPCL). The state Public Works Department is responsible for construction and maintenance of roads and other public infrastructure in the city. The UP State Transport Corporation provides inter city and intra city bus services in the city. The pollution control and monitoring especially river water quality and industries is done by UP Pollution control board (UPPCB).

Apart from the Kanpur Nagar Nigam, the institutional responsibility for slum improvement vests with the State Urban Development Agency (SUDA), the apex policy making and monitoring agency for urban areas in the state. The Kanpur District Urban Development Agency (DUDA) undertakes the executions of SUDA in the district. The DUDA is responsible for works relating to community development and various schemes related to urban poor such as development of slum communities, construction of community toilets, assistance in construction of household latrines, infrastructure improvement in slums creation of awareness etc.

2.9 MUNICIPAL FINANCE STATUS OF KANPUR NAGAR NIGAM

Municipal finance hold the key for overall status and progress of service delivery in the city. Effective financial management can help municipalities to transform their local areas into a better place to live and work. The revenue for Kanpur Nagar Nigam generates through taxes, non-taxes, assigned revenues, plan and non-plan grant receipts from central and state governments. The average annual income of Kanpur Nagar Nigam for the financial years (2000-01 to 2004-05) is ₹12795.4 lakhs. Out of which, income incurred through plan,non - grants and general tax constitute majority of the total revenue. The assigned revenue and taxes are the other major contributors of revenue generation. In the year 2000-01 the total revenue of city is ₹15192.74 lakhs and it increased to ₹15402.35 lakhs in financial year 2004-05, with an average annual growth rate of 3 percent.

The expenditure pattern of Kanpur Nagar Nigam is categorized under the heads of establishment, operation & maintenance, capital expenditure and others. On an average for the five financial years major portion of expenditure is made on establishment head which mainly include salaries for the municipal staff and other administrative costs. The average yearly

expenditure of the city in the five financial years is ₹11872.9 lakhs with an average yearly growth rate of 2 percent. In the five financial years Kanpur Nagar Nigam never experienced deficit in total budget. The following *table 2-9* presents a comparison of the receipts and expenditure incurred by Kanpur Nagar Nigam for the five financial years (2000-01 to 2004-05).

Table 2- 9: Municipal Finance details of Kanpur Nagar Nigam for the five financial years (2000-05)

(Rs.in Lakhs)

Financial Year	2000-01	2001-02	2002-03	2003-04	2004-05
Income					
Revenue Account	13022.74	10260.88	10900.79	11426.05	15212.35
Capital Account	2000	0	0	0	0
Other Account	170	384.37	221.59	188.08	190
Total Revenue	15192.74	10645.25	11122.38	11614.13	15402.35
Expenditure					
Revenue Expenditure	12837.76	10543.74	9865.89	11341.36	12932.65
Capital Account	302	1.99	337.35	0.75	552
Other Account	141	96.12	127.6	78.38	206
Total Expenditure	13280.76	10641.85	10330.84	11420.49	13690.65
Total Deficit/Surplus	1911.98	3.4	791.54	193.64	1711.7

Source: City Development Plan

2.10 SCHEMES/PROGRAMMES FOR SLUM IMPROVEMENT (HOUSING TREND SUPPLY FOR URBAN POOR)

Kanpur, with its industrial and economic status attracts large number of migrants, faces the major problem of the increase of urban poverty. More than 35 percent of the city population is urban poor. The complexity of problems facing by the urban poor relates to social, economical, physical environmental and other related factors. In order to mitigate the problems of urban poor, achieving objectives of inclusiveness and overall sustainability, several programmes were designed at National and state level typically targeting infrastructure Improvement of poor settlements, provision of housing, improvement in primary health and welfare services, employment generation for the poor etc. The details of few major existing urban poverty schemes implementing in Kanpur are given below.

a. Implementation status of BSUP

The Basic Services for Urban Poor (BSUP) aimed at improving the housing stock and basic infrastructure for urban poor in the JnNURM mission cities is under implementation stage in Kanpur from the year 2006. The State Urban Development Agency (SUDA) is the nodal agency at the state level and the Kanpur District Urban Development Agency (DUDA) is the implementing agency. As on June 2013, 7802 households in 48 slums are selected under BSUP scheme, which includes construction of dwelling units and provision, up gradation of infrastructure facilities in the slums. An amount of ₹ 38479.66 lakhs is estimated for carrying out slum improvement activities under BSUP programme for Kanpur city.

b. RAY Pilot project - preparation of DPR

In Kanpur, Harivams Mohal and Pokar Puva slums are selected as pilot projects under RAY scheme. The Detailed Project Report (DPR) prepared for the 2 slums were approved by the government. About 128 new dwelling unit constructions were scheduled to taken up with a sanctioned amount of ₹1343.07 lakhs. Along with the construction of dwelling units the work includes construction of roads, construction of sewerage lines, drainage, solid waste management, provision of electricity, community hall, park, rain water harvesting etc.

CHAPTER 3 - ASSESSMENT OF EXISTING STATUS OF SLUMS

3.1 DIAGNOSTIC ASSESSMENT OF SLUMS

The living conditions in slums represent the worst of urban poverty. Individuals and communities living in slums face serious challenges in their efforts to survive. Every slum is different in its origin, location, size and demographic characteristics. All characteristics are not common for all slums in the city. It may differ due to various reasons such as its appearance, economic condition, overcrowding of buildings, tenements, population, health and sanitary conditions, morality, way of life, standard of living, isolation of other residential communities etc

For assessing the current situation of slums, appropriate indicators are required to understand the depth of problems. These indicators are derived from RAY guidelines wherein a detailed household / livelihood survey was conducted to identify the slums which are characterized by poor quality of housing and poor infrastructure. The following sections provide insights into the real picture of slums.

With increase in population of the city, housing needs grew, which could not be met by formal housing market. Migrant population, which could not avail the facilities of suitable housing and lack of monetary support were forced to satisfy their needs by occupying both private and public vacant lands and resulted in formation of slums and more number of squatter settlements.

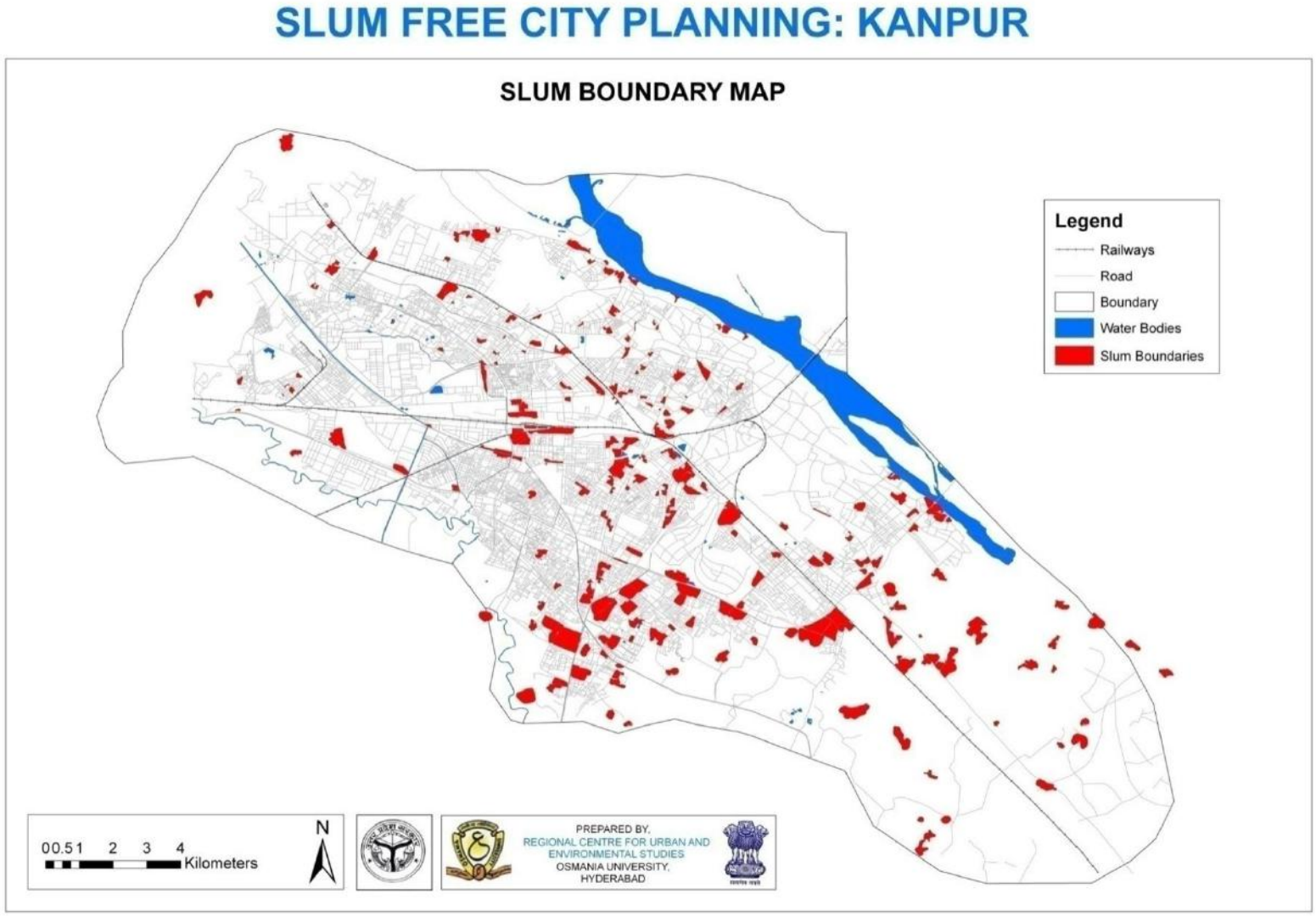
Kanpur city has a total of 412 slums, out of which 95 were built on land belongs to private ownership and 152 slums were situated on land belongs to urban local body. The total population living in slums is 714027, which accounts 26% of the city population (as per census 2011). Of the total 412 slums in the city, 300 slums have existed for more than 50 years. Considering the physical location of the slums, 120 slums are located in Non-hazardous/Non-objectionable sites, 57 slums are located along major transport alignment, 86 slums are located along open and storm water drains, 69 slums are located along river / water body bank and 28 slums are located on hazardous/objectinable sites. Most of the slum settlements are concentrated around the core area of the city, along the highways and around other dominant location/land use forming larger clusters.

Table 3- 1 : Comparison of city population & area against the slums

City Population	Slum population	% of slum population to city population	City Area (Ha)	Total Area under slums (Ha)	% of slum area to city area.
2767031	714027	26%	26223	1274.71	5%

Source: Census 2011, RAY Primary Survey, 2011

As shown in the *Map 3-1*, 272 slums are located in the core part of the city, while the other 140 slums in fringe areas. The abutting land use around the slums is predominantly residential in nature.



Map 3- 1 : Location of Slums in Kanpur City

3.2 LISTING OF SLUMS –BASED ON NUMBER, STATUS, TENABILITY AND TENURE STATUS

For the purpose of analyzing the existing situation, the deficiencies of the slums and to provide improved basic urban services, the following variables mentioned in RAY guidelines were studied:

- Land tenure status
- Land tenability
- Ownership of the land
- Age of the slums

Considering the above variables, the details of each slum in the city that are characterized by poor physical and socio-economic conditions, irrespective of land tenure status and ownership have been identified through primary surveys. The following *Table 3-2* summarizes the aspects crucial for determining the current status of Kanpur slums.

Of the total 412 slums, 152 slums are on urban local body and remaining 95 slums were situated on land belongs to Private lands, 62 slums under state government ownership. As shown below in the *Table 3-2*, 16% of the slums do possess a secured tenure status and an enabled pleasant living condition.

Table 3- 2 : Distribution of the slums w.r.to tenure, land tenability, age and land ownership

TENURE			LAND TENABILTY		
Status	**Secure**	**In secure**	**Tenable**	**Semi Tenable**	**Non - Tenable**
No. of Slums	66	346	241	138	33

AGE OF SLUM						
Age	**0-10 years**	**10-20 years**	**20-30 years**	**30 - 40 years**	**40 - 50 years**	**Above 50 years**
No. of Slums	1	10	28	37	36	300

LAND OWNERSHIP							
Ownership	**Local Body**	**State Government**	**Central Government**	**Private**	**Defense**	**Railways**	**Others**
No. of Slums	152	62	17	95	5	23	58

Source: RAY Primary survey, 2011

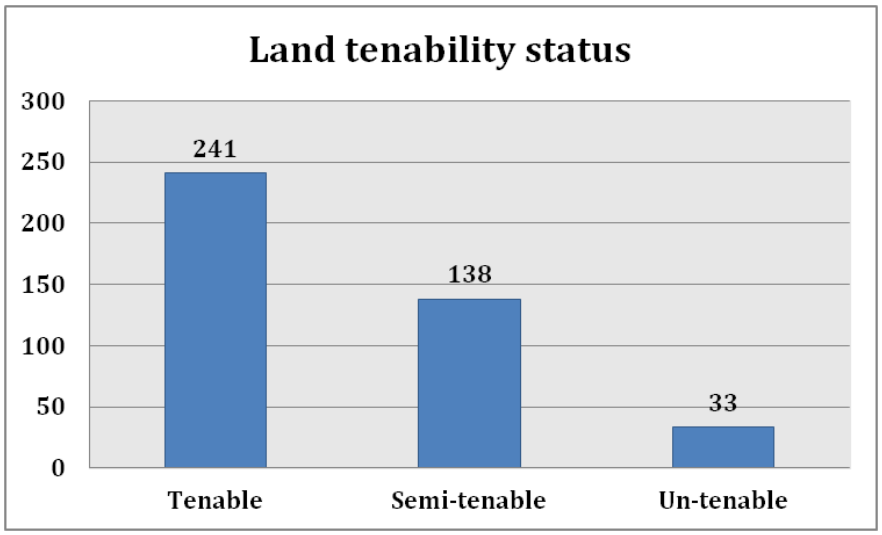
3.2.1 Distribution of Slums by Land Tenure Status

Land tenure is an important part of social, political and economic structure of any neighborhood and enables entitlement of formal access to basic services. According to RAY guidelines, tenure status is "the mode by which land/property is held or owned or the set of relationships among people concerning land/property or its product" and defines the legal status of the land. As shown in the *Table 3-2*, 16% of the slum lands are secured and have access to basic amenities and in possession of certification while 84% of the slums are Insecure, which needs regularization. While identified slums have some security of tenure

and fall under the purview of municipal service provision, the unidentified slums fall outside the net of formal service provision.

3.2.2 Distribution of Slums by Land Tenability Status

The land status of all listed slums/informal settlements should be classified by the ULB as tenable[3], semi tenable[4] or untenable[5] in order to determine whether the land is fit for human habitation and void of health hazards (RAY Guidelines).



Source: RAY Primary survey, 2011

Figure 3- 1: Distribution of slums in the city w.r.to land tenability status

As shown in *Figure 3-1*, the current land tenability status for the 412 slums as identified has been presented where 59% (241 slums) of the slums are found to be tenable, 33% (138 slums) slums are semi-tenable and 8% (33 slums) are Un-tenable.

3.2.3 Distribution of Slums by Land Ownership

As shown in *Figure 3-2*, it is observed over that 37% of the slums are built on lands are owned by urban local body. On other side, 23% of the slum lands belong to Private ownership and 15% under State Government; 14% of the slum lands belong to other ownership, 6% under Railways and 4% under Govt. of India other than railways, defense and airport. The remaining 1% of the slums is built on the lands belong to the ownership of Defense.

[3] According to RAY, Tenable slums means all slums which are not located on hazardous locations suitable for human habitation and the land not earmarked for any major public facilities and therefore it can be regularized in the same location.

[4] Semi tenable slums are those slums which are located on land zone for non-residential uses as prescribed by the master plan.

[5] Untenable slums are those settlements which are on environmentally hazardous sites, ecologically sensitive sites, prohibited areas around heritage sites, and on land marked for public spaces, utilities and services and infrastructure. These shall include settlements in lake/tank beds or near hazardous or polluting industries / activities which are detrimental to the life and property of the inhabitants occupying them.

In 23% of the slums situated on private land, 27% of the dwelling units hold pattas, possession certificates and are still eligible for slum redevelopment programmes considering the varying economic status of those dwellers.

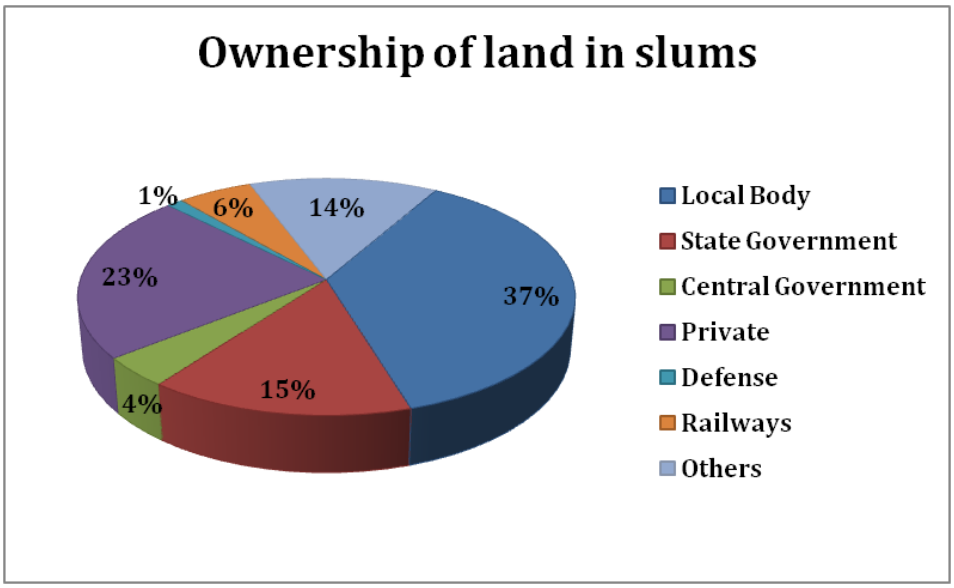


Figure 3- 2: Percentage distribution of slums in the city w.r.to Ownership of land

3.2.4 Distribution of Slums by Age

Age of the slum is one of the important information to assess the condition of a slum in any city. Considering the fact that Kanpur being one of the oldest, populus as well as major Industrial city of Uttar Pradesh, it has slums into existence over 50 years. It is interesting to note that 73% of the slums in the city have been into existence for more than 50 years with remaning 27% of slums less than the 50 years. (*shown in Figure 3-3*).

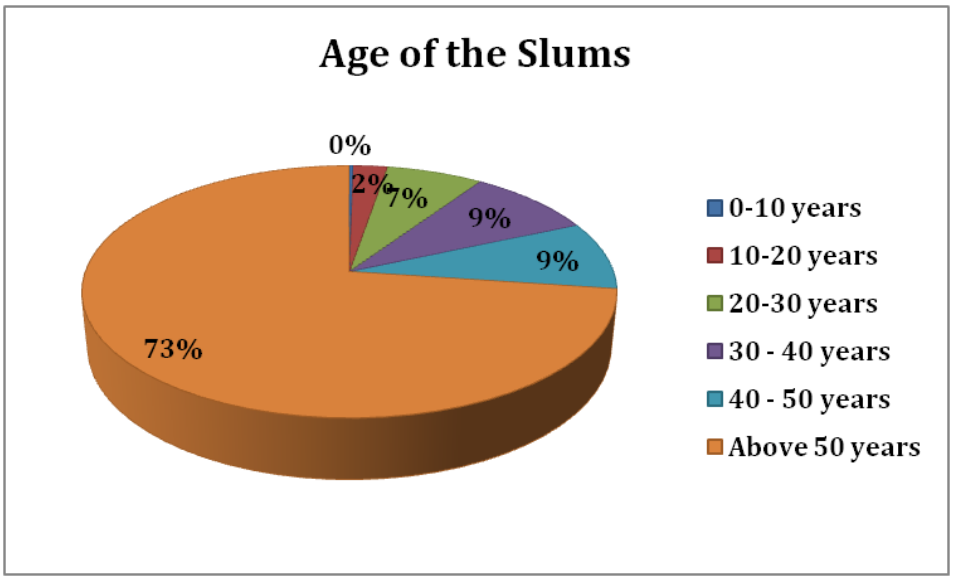
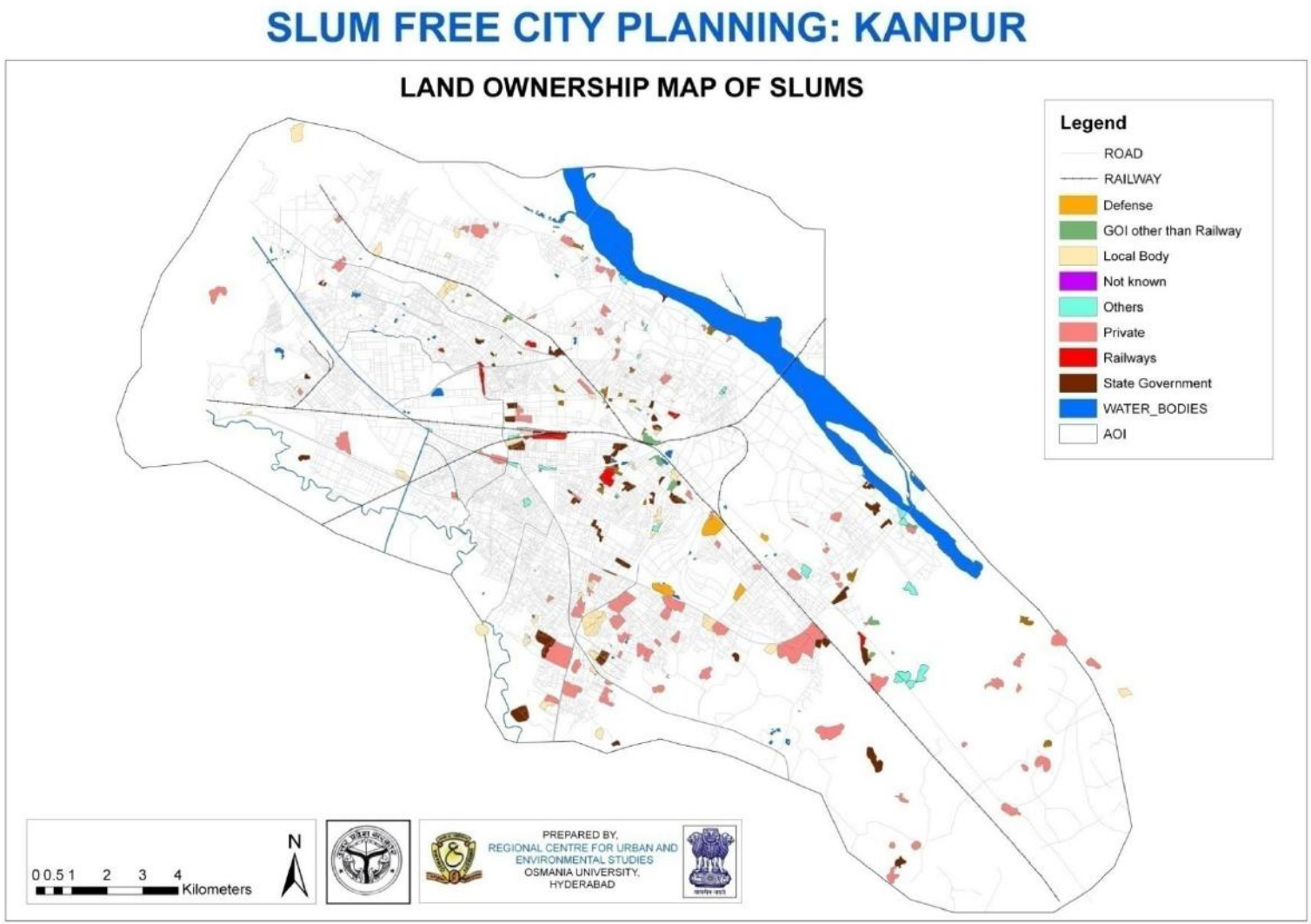


Figure 3- 3: Percentage distribution of slums in the city w.r.to age



Map 3- 2 : Location of Slums in the city w.r.to Ownership of Land

3.2.5 Notification status of the slums

According to National Sample Survey Organization, areas notified as slums by the respective municipalities, corporations, local bodies or development authorities were treated as "notified slums", they tend to receive higher level of services and those unrecognized by the local bodies were considered as "non-notified slums". Kanpur city is having a total of 412 slums, currently 101 slums are notified by ULB to avail higher level of basic services. As seen in *Map 3-3*, 311 slums marked in red color indicates that these are not yet notified, which requires the concerned authority to ascertain that these slums are to be provided with basic amenities. The Annexure – I primary survey has been done for all 412 slums in the city.

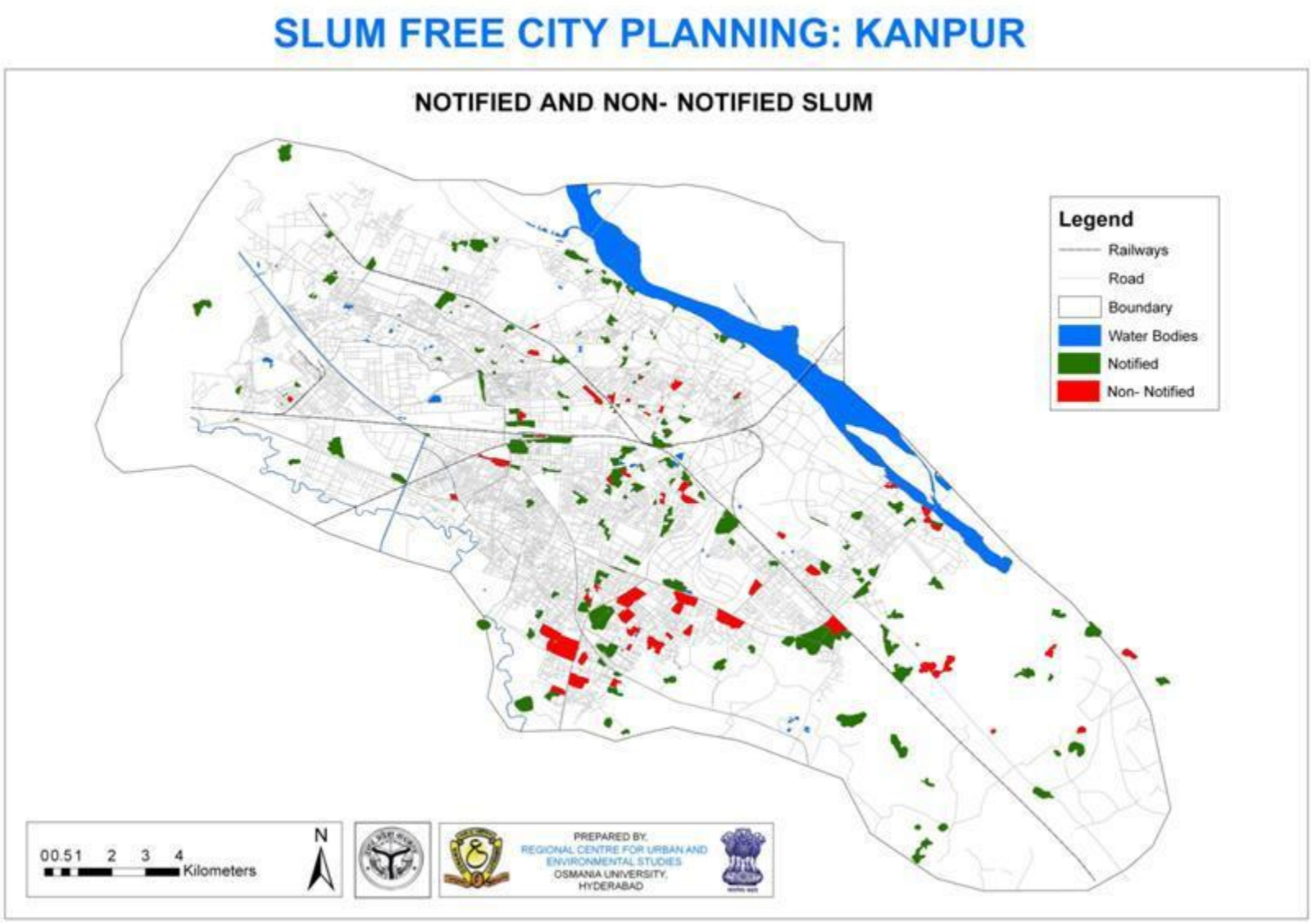
Table 3- 3 : Notification status of Slums

	NOTIFICATION STATUS			% PROPORTION OF SLUMS	
Status	**Notified**	**Non-Notified**	**Total**	**Notified**	**Non-Notified**
No. of slums	101	311	412	25%	75%

Please refer Annexure-1A, for a detailed slum wise description of the above.

Picture 3- 1 : A view of Raja Ram Batham Slum, Kanpur

Picture 3- 2 : Chawlal Slum of Ward no. 92, Kanpur



Map 3- 3 : Location of Notified and Non- Notified Slums in Kanpur City

3.3 PHYSICAL PROFILE

Slums in Kanpur are scattered throughout the city and found mostly in the core area and in the vicinity of railway tracks and few on Kanpur – Lucknow highway. The general composition of majority of slums comprises of scheduled caste, and other backward classes, forming the weaker section of the society. From habitation point of view, in general, the slums located in the low lying areas, along open drains/Nallah, tank beds and hazardous/toxic sites are susceptible to inundation, and other forms of disasters.

The slum concentration in these areas has not only led to poor living conditions for the slum dwellers but also responsible for the general deterioration of the living environment in the city. This is primarily due to lack of proper infrastructure services in these areas and considering the fact that most of these slums are overcrowded, there is always constant pressure on the city infrastructure and resources. In this section, the following set of variables was studied to assess the existing housing scenario in terms of the structures, its type, access to electricity and other related issues so as to bring out the deficiencies:

- Location of slums and its area
- Flood prone slums
- Physical location of slums
- Abutting land use
- Housing type

Table 3- 4 : Summary table of the slums – area, location, abutting land use & flood vulnerability

AREA OF SLUM								
Area (Ha)	**0 - 1 Ha**		**1 - 2 Ha**		**2-3 Ha**		**3 - 4 Ha**	**More than 4 Ha**
No. of Slums	170		76		40		35	91
LOCATION OF SLUM IN CITY								
Location	**Core area**				**Fringe area**			
No. of Slums	272				140			
PHYSICAL LOCATION OF SLUM								
Location	**Along Nallah (Major Storm water Drain)**	**Along other drains**	**Along Railway line**	**Along Major Transport Alignment**	**Along River / Water body bank**	**On River/ Water body bed**	**Hazardous/ Objectionable**	**Non-Hazardous / Non - Objectionable**
No. of Slums	61	25	52	57	43	26	28	120
SLUMS PRONE TO FLOODING DUE TO RAINS								
No. of Days	**Not Prone**		**Up to 15 days**		**15 - 30 days**		**More than 30 days**	
No. of Slums	360		35		4		13	
TYPE OF AREA SURROUNDING SLUM								
Type of Use	**Residential**		**Industrial**		**Commercial**		**Institutional**	**Others**
No. of Slums	265		37		70		2	38

Source: RAY Primary Survey, 2011

3.3.1 Distribution by Slum Area

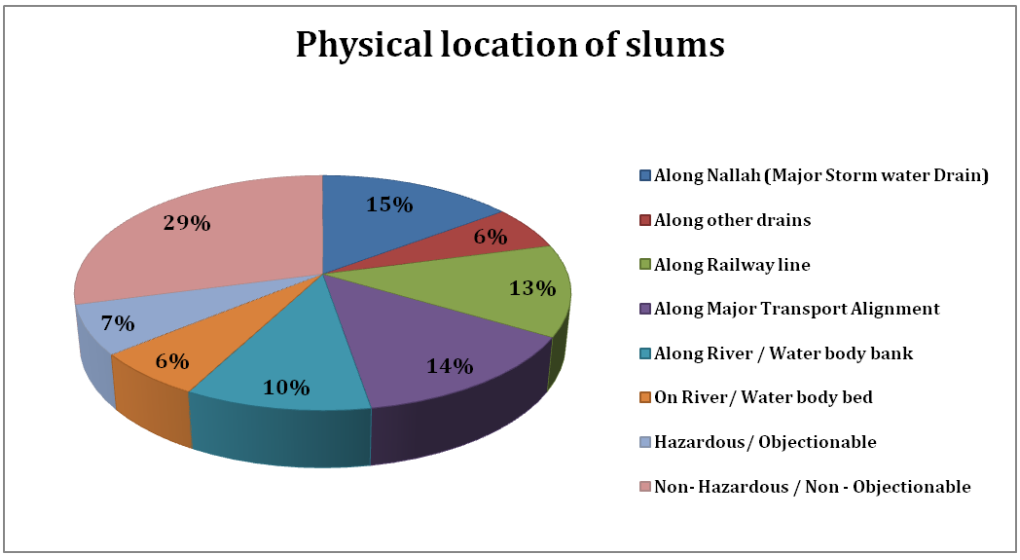
According to the primary survey, slum population constitutes 26% of the total City population where as the total slum area is (1274.71 Ha) 5% of the total city area. Nearly 41% of slums are found to be situated in area less than 1 Ha and 59% of slums are situated in area more than 1 Ha. The total slum area under the ownership of urban local body is 344.6 Ha, and the State Government ownership is 414.9 Ha.

3.3.2 Flood Prone Slums

As indicated in the *Table 3-4*, 360 slums are found to be not prone to floods and the remaining 52 slums are found to be flood prone with rain water remnant for up to 15 days or even more, indicating lack of safety to the slum dwellers. In 13 slums it was found that the water would stagnant for more than 30 days.

3.3.3 Distribution of Slums by Physical location

Out of 412 slums, 272 slums in core area of the city and the remaining 140 are in urban fringe areas. With respect to the physical location, around 14% are located along the major transport alignment, 21% along the open and storm water drains; 13% along the railway lines. On other side, 16% slums are found to be located along the river as well as on the river beds. In addition, 29% of the slums are located on the sites of non hazardous / non objectionable areas and the remaining 7% (28 slums) are observed to be situated along the hazardous/objectionable sites. But, in the primary surveys and on consultation with DUDA, it was observed and taken into consideration that only 7 slums out of 28 are hazardous with respect to physical location. Further it is noted that 69 slums are located along the river/on water body bed which are more vulnerable to any kind of manmade or natural disaster (seen in *Figure 3-4*). These slums require special attention before undertaking any development, the beneficiaries cooperation and their livelihoods are of paramount importance.



Source: RAY Primary survey, 2011

Figure 3- 4: Percentage distribution of slums w.r.to Physical location

3.3.4 Distribution of Slums by Abutting Land use

Looking into the aspect of abutting land use, 64% of the slums are surrounded by residential land use followed by 17% commercial and 9% industrial use. About 9% of the slums are surrounded by 'Other' use of land such as Agriculture, vacant lands etc. In the city out of 140 slums located in the fringe areas, 62% of the slums are bounded by residential, 19% by commercial, 15% surrounded by industrial and remaining 4% is surrounded by the institutional and other use.

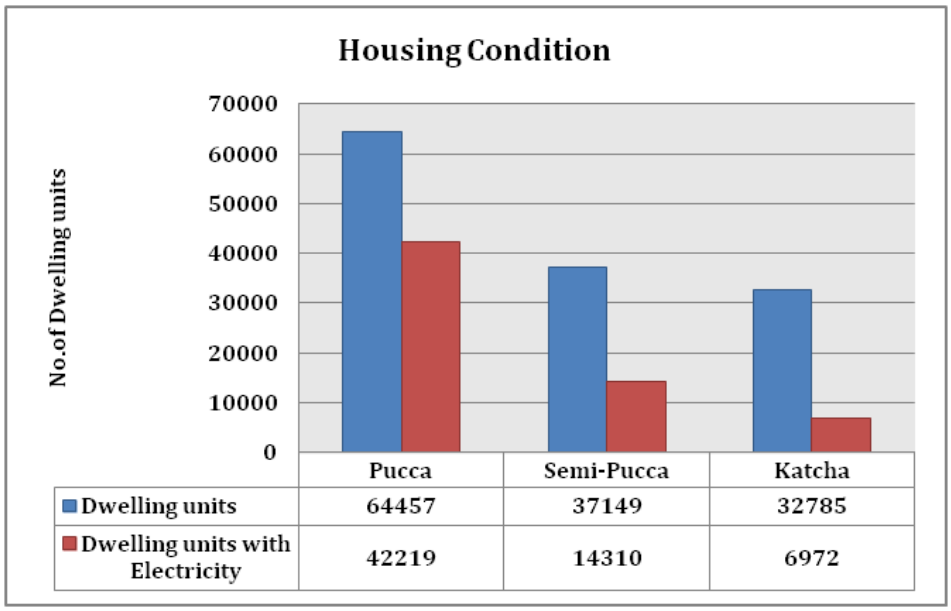
Picture 3- 3 : Slum along Major Transport Alignment

Picture 3- 4 : Slum along Railway line

3.3.5 Distribution of Slums by Housing type

Housing is one of the prime indicators to assess the existing condition of a slum. In order to understand the degree of living conditions, data on the type of housing structures in the slums is collected to examine the housing scenarios. For analysis purpose, the dwelling units were classified into pucca, semi-pucca and katcha based on the kind of roofing and wall materials used.

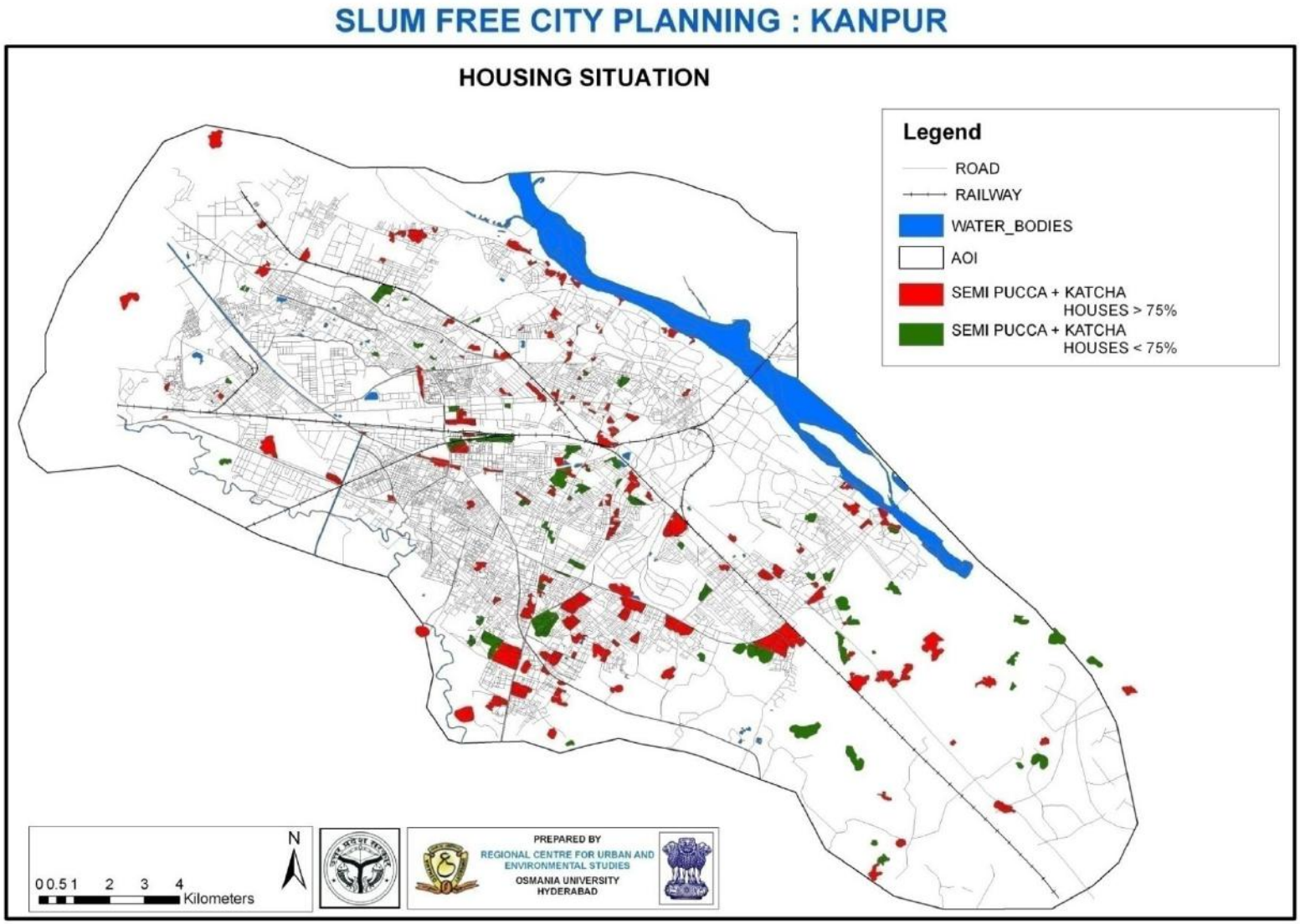
In Kanpur the total number of dwelling units in the slums is 134391. Out of these, 48% of dwelling units are Pucca constructions, 28% units are Semi-Pucca and the remaining 24% are katcha in nature. With respect to electricity connection, only 47% of the dwelling units in slums have access to electricity which includes 65% of pucca dwelling units, 39% of semi-pucca and 21% of katcha dwelling units. The remaining 53% of dwelling units in slums do not have electricity connection indicating the pathetic status of the slum dwellers. Hence there is a dire need to cover these houses with electricity,



Source: RAY Primary survey, 2011

Figure 3- 5: Housing condition of dwelling units in the slums w.r.to structure type and electricity

The *Map 3-4* depicts the current housing structure condition in the slums of Kanpur. For analytical purpose, semi pucca and katcha houses were considered exclusively to determine the housing shortage and the need to implement suitable housing redevelopment programmes. If the semi Pucca + katcha houses were greater than 75% then it is considered poor housing in rehabilitation state which needs to be addressed immediately or rebuilt. In the same way if the semi Pucca + katcha houses were less than 75% then it is assumed that housing condition not as good as Pucca houses. As per the data results, it was found that 118 slums have semi Pucca + katcha houses more than 75% while 287 slums in the latter category.



Map 3- 4 : Condition of Housing in Slums, Kanpur

Picture 3- 5 : Pucca Dwelling units in Matadin Ram Sarju Slum

Picture 3- 6 : Semi – Pucca Dwelling units in Raja Ram Batham

Picture 3- 7 : Katcha type Dwelling units in Raja Ram Batham Slum

Picture 3- 8 : Katcha type housing structures in Satya Prakash slum

Based on the income levels and the affordability levels of the households, the kind of housing is determined and varies accordingly. Similarly in Kanpur, 48% of the Pucca houses are built using wall materials of burnt bricks, stones, cement concrete, timber, and roofing of reinforced brick concrete and reinforced cement concrete, PCC flooring. While semi Pucca houses have walls made up of Pucca material but roof is made up of the material other than those used for Pucca house and katcha houses are usually found to be built using make shift material like sandstone tiles, thatches, loosely packed stones, Jhopris and temporary tents.

Although most the dwelling units are Pucca in nature, it is irony that majority of dwelling units are in dilapidated condition which need to upgrade. On housing occupancy status, it was found that 89% of the houses are self-occupied and 11% are rented. Due to lack of choice, and security, the population is forced to live and work in informal settlements and earn on a daily basis.

For slum wise details, please refer Annexure-1B.

3.4 DEMOGRAPHY & SOCIAL PROFILE

3.4.1 Population

According to Annexure-1 primary survey, the total population in **412 slums** is **714027** residing in **152124** households, with an average household size of 5. The average population density of slum area in the city is 560 persons per Hectare. The Shiv katra slum is having the highest population (10400) and Ram gunj slum is having the lowest (123). The slum wise distribution of population is shown in *Map 3-5*.

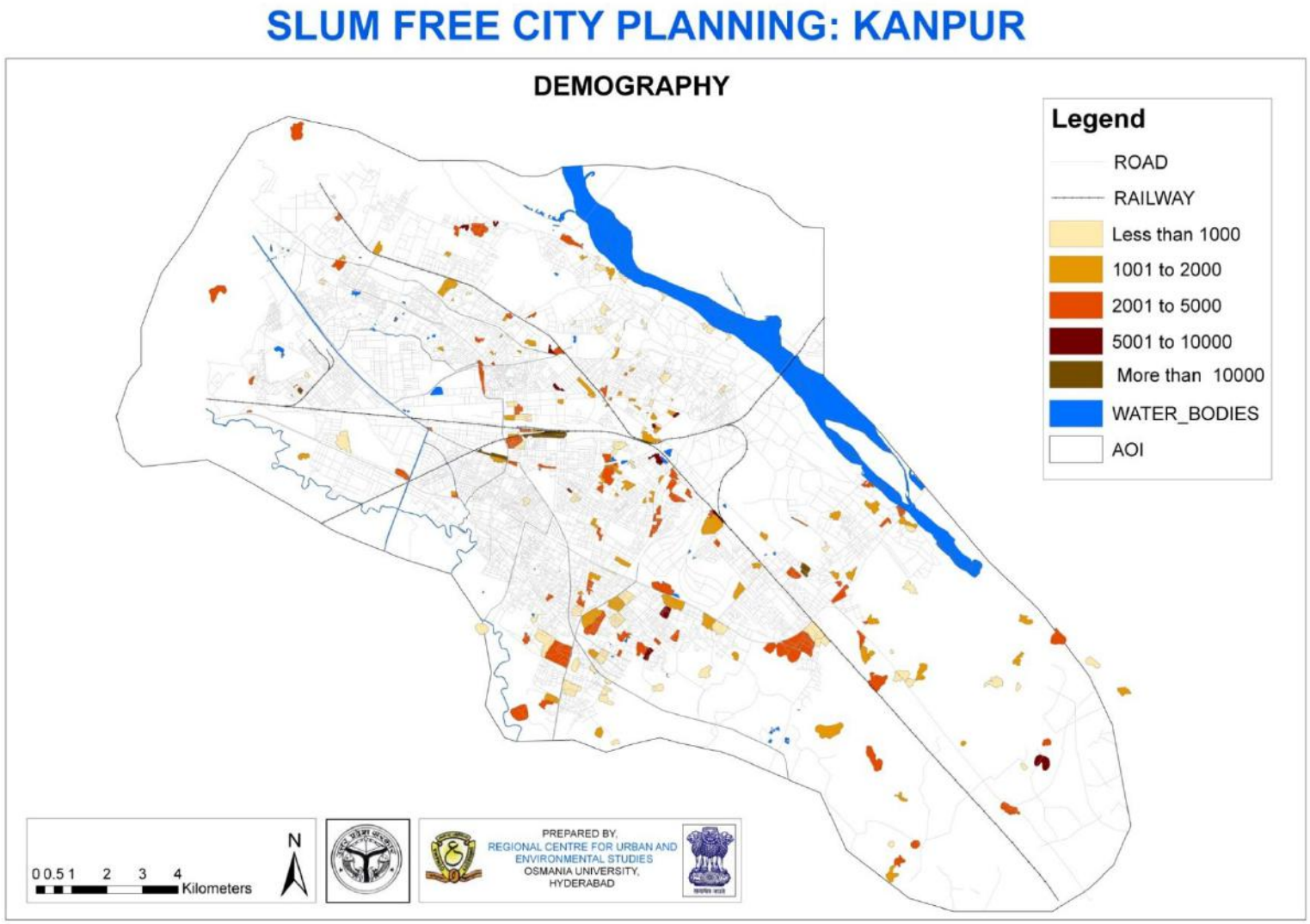
3.4.2 BPL Population & Households

The BPL population constitutes about 36% of the slum population. Of the total slum households, 31% are BPL households i.e., 47444 households.

Table 3- 5 : Distribution of Slum population w.r.to different social groups

PARTICULARS	SC	ST	OBC	Others	Total	Minorities (out of total)
Total Slum population	335813	23467	228469	126278	714027	332065
Total Households	67249	4206	49357	31312	152124	65514
Total BPL population	117159	8161	91271	42180	258771	150079
Total BPL Households	21677	1958	15979	7830	47444	26394
No. of women headed households	7770	1050	5168	2837	16825	9263
No. of persons > 65 years	18192	2214	13081	7603	41090	25412

Source: RAY Primary Survey, 2011

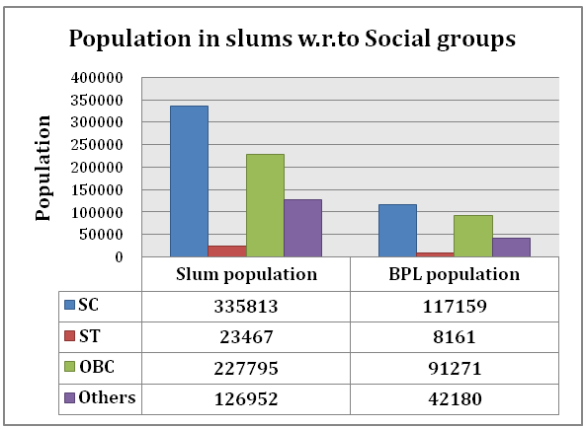


Map 3- 5 : Classification of Slums in the city w.r.to Population

3.4.3 Distribution of Slum population & households by different Social groups

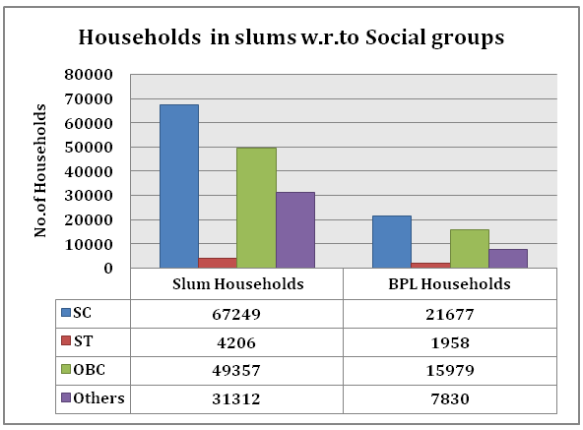
In the context of different social groups residing in slums of Kanpur, SCs and OBCs constitute the major proportion. About 79% of the population living in slums belongs to OBC & SC division of social groups. About 81% of OBC & SC population in slums is under BPL.

In consideration with households, about 77% of the households in the slums belong to OBC and SC division of social groups. Of total slum households, about 32% belong to OBC group of social division. It is further observed that 32% of OBC households in slums and 32% SC households are living below poverty line (BPL).



	Slum population	BPL population
SC	335813	117159
ST	23467	8161
OBC	227795	91271
Others	126952	42180

Figure 3- 6: Distribution of population in slums w.r.to different social groups



	Slum Households	BPL Households
SC	67249	21677
ST	4206	1958
OBC	49357	15979
Others	31312	7830

Figure 3- 7: Distribution of Households in slums w.r.to different social groups

Source: RAY Primary survey,

3.4.4 Distribution of slum households by Minority communities

In Kanpur a significant proportion of minority[6] communities are living in slums. About 47% of the slum population belongs to minority communities and constitute about 43% of the total slum households. In terms of BPL population and households, 58% of the minority population in slums stood below the poverty line occupying 56% of total BPL households.

As shown in the *Table 3-5,* the persons with more than 65 years of age constitute 6% of the slum population. About 11% the total households in the slums are women headed households, which is more seen among SC social group of households.

3.4.5 Literacy rate

The literacy rate of slums in Kanpur is 76%, where the male literacy rate is observed to be more compared to female literacy rate. In respect to different backward social groups, the literacy rate is more among SC's compare to OBC's and ST's. The literacy rate is 60% among minority groups.

[6] The Muslims, Christians, Sikhs, Buddhists and Zoroastrians (Parsis) were notified as minority communities in India under section 2(c) of the National Commission for Minorities Act, 1992.

3.4.6 School Dropouts

According to Planning Commission, though most Indian States have done well in enrolling more and more children in schools, their inability to retain them has been a problem. The dropout rate was least for those belonging to the highest income group and maximum for those from the lowest income group and economically weaker sections. Children from poorer sections of the society drop out in the early stages of education due to the fact that either the children or their parents were not interested and nearly as many were on account of economic considerations, compulsion to work for wages or looking after younger siblings.

As per Annexure-I survey, it is found that a considerable number (36645 children approx) of the children living in slums were school dropouts. The mitigation measures needs to be taken through strict implementation of education policy programmes and provision of elementary education to the deprived groups.
For slum wise details, please refer Annexure-1C on social profile.

3.5 ECONOMIC PROFILE

Slums are the places of extreme urban poverty. The statistics with respect to the population residing under Below Poverty line in slums of Kanpur conveys the same. Majority of the slum dwellers in the city were found to be migrated to the city in search of livelihood.

As Kanpur is the capital city of one of the biggest states in the country, a major service sector based economy and a commercial centre in North India attracts large number of skilled and un-skilled labor from different parts within the state and neighboring states in search of livelihood.

Majority of the working force in slums were found in deriving livelihood through informal sector, rickshaw pullers, construction workers, industry workers etc., The Economic status of slum dwellers is discussed here under considering the aspects of type of employment, household income etc.

Overall employment and unemployment table is shown in Annexure-1E

3.5.1 Livelihood profile

Two types of labor exist in all economies: skilled and unskilled. Skilled labor is the portion of workers in an economy that have specific, technical industry skills relating to business and the production of goods. Engineers, welders, accountants and scientists are a few examples of skilled labor. Unskilled labor is the cheaper and less technical portion of the workforce that makes up a large part of an economy's labor market. This workforce plays the important part of performing daily production tasks that do not require technical abilities.

As indicated in **Annexure –I** survey, 24% of the slum population are illiterates, lack in skill and professional training, making it difficult for them to obtain skilled employment opportunities in Kanpur, hence end up doing low or moderately paid jobs on a daily basis.

A majority of the working population in the slums is engaged as in lives stock and its allied activities, agricultural and construction laborers, rickshaw pullers, auto rickshaw drivers,

informal sector like selling fruits, vegetables, other utensils, small scale industries, tobacco making, wholesale business and home based small businesses. On the other hand, women in the families are majorly involved in domestic help.

3.5.2 Distribution of slums households by Occupation Status

As per Annexure –I survey, it is inferred that 28% of the households are found to be working as casual laborers and 27% on regular wage basis which includes domestic help, rag pickers, and vegetable vendors. Only 15% is actually working on monthly salary, indicating a secured position and skilled employment. Therefore, nearly 36% of the slum households do not have access to a dependable occupation and secure income.

As per the recent Annexure–I survey, 36% of the slum households do not have opportunities towards sustainable occupation and secure income. This situation of slum livelihoods need to be taken into consideration in future development programmes as there is a dire need for an enhanced productivity in the city.

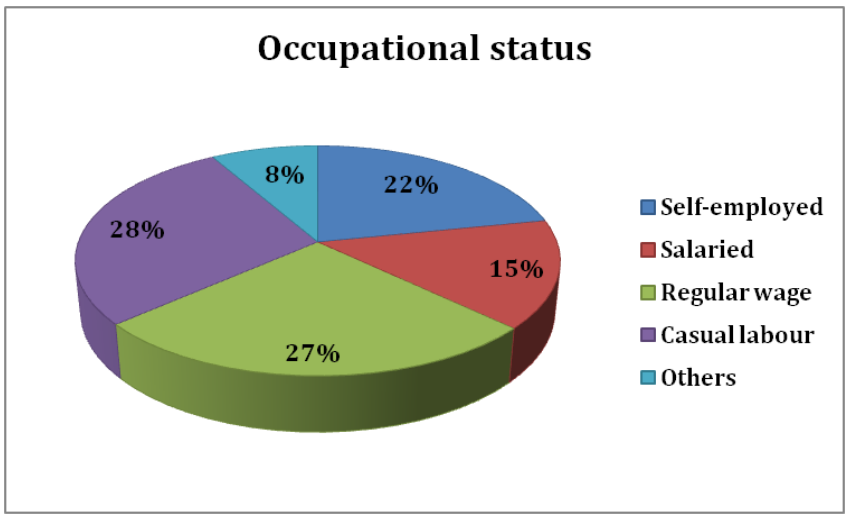


Figure 3- 8: Distribution of slum household's w.r.to occupational status

Picture 3- 9 : Rag picking in slum, Kanpur

Picture 3- 10 : Construction workers

3.5.3 Monthly Income by Households

In respect to monthly income of households, it is found that, about 36% of the households income ranges between ₹2000-₹3000. 35% of the households earn in the range of ₹1500 - ₹2000. The households earning less than ₹1500 constitute about 4%.

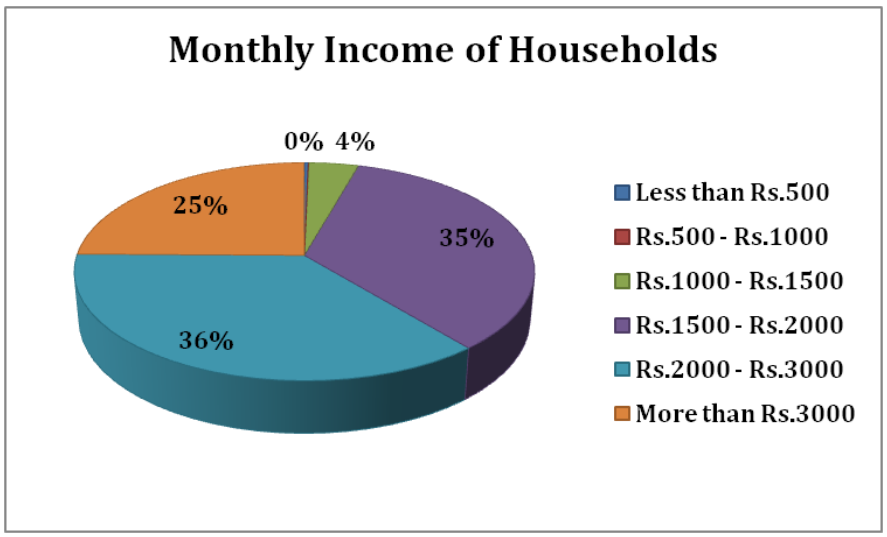


Figure 3- 9: Distribution of household's w.r.to monthly income

Further, the livelihood pattern has become indefinite and irregular for the households, where only 25% of them are earning more than ₹3000/- per month.

The above statistics reveal that there is urgency in creating economic assistance which has to include training, job placements, credit and technical support to small and marginal businesses, creating new society –owned enterprises, providing micro-finance facilities and loans for housing and financial assistance such as subsidies for building materials.

There is ample scope for programmes like SJSRY projects to be launched particularly STEP UP, UCDN, UWESP in most of the slums as part of livelihood promotion and leads to enhanced productivity.

For slum wise details, please refer Annexure-1D on Economic details.

3.6 PHYSICAL INFRASTRUCTURE

Sustainable growth of a city depends on its infrastructure facilities. Lack of infrastructure and institutional mechanism can lead to collapse of urban system in a city. Access to basic services has now become a criterion for identification of the poor areas in a city. The responsibility for urban service provision in an equitable manner lies with the ULB, where an increasing gap in service levels and the difficulties in providing the same are prevalent. Information on access to services in terms of Physical Infrastructure of slums Kanpur city has been collected and a brief analysis on the current status of Water Supply, sewerage, Storm Water drainage and Solid Waste Management in slums is presented. The numbers indicated in the following *Table 3-6* are based on Annexure – I survey of 412 slums.

3.6.1 Water Supply

Table 3- 6 : Current status of water supply in slums

SOURCE OF WATER SUPPLY FOR HOUSEHOLDS								
Source	**Individual Tap**	**Public Tap**	**Tube well/ Bore well / Hand pump**	**Open Well**	**Tank / Pond**	**River/Canal/ Pond**	**Water Tanker**	**Others**
No. of Households	79842	37565	22959	867	0	0	58	10833

WATER SUPPLY SOURCE			
Ownership	**No. of Individual Taps**	**No. of Public taps**	**No. of Tube wells/ Bore wells / Hand pumps**
No. of Connections	72626	3325	1263

DURATION OF PIPED WATER SUPPLY TO SLUMS							
Duration	**Less than 1 hr daily**	**1-2 hr daily**	**More than 2 hrs daily**	**Once in a week**	**Twice a week**	**Not regular**	**No supply**
No. of Slums	54	307	31	2	0	17	1

Source: RAY Primary Survey, 2011

a.

Existing sources of Drinking water

In regard with source of drinking water, over 52% of the slum households i.e., 79787 households out of 152124 households have their own individual water supply connections, where potable drinking water being supplied by the ULB. A significant portion of 48% of the slum households does not have own water supply connection. They usually depend on public taps, hand pumps, tube wells and on neighbor households who have access to water supply connections.

b. Duration of Piped Water Supply

The drinking water is supplied usually once in a day or once in couple of days in the city which change in accordance with season. In Kanpur, for about 75% of the slums (307 slums) the piped water is supplied for duration of 1 to 2 hours daily. In Harijan Basthi Kidwainagar slum, the piped water supply is totally absent and 17 slums don't have regular piper water supply with people majorly depend on hand pumps, wells, tube wells for drinking water. In 31 slums are found that the drinking water is supplied for more than 2 hrs daily and in 2 slums the duration is once a week.

Picture 3- 11 : Hand Pump in Matadin Sarju Slum

Picture 3- 12 : Public Water Tank in Safera Estate slum

Despite the connectivity to city wide water supply system, the major problem observed to be is the poor quality of water. The source of water supply to the city is through ground water and the quality of water being supplied by the ULB is of standard 'India Mark II'. The mix of pollutants, cracked old water pipes may be a factor for contamination of water. The quality of water is one of the major tasks in the city which needs to be addressed immediately.

3.6.2 Sanitation

Sanitation and sewerage system are not only the basic necessities of life, but they are also crucial for achieving the goal of "Health for All". Increased sanitation coverage is directly linked to improvement of health status. Lack of sanitation is a universal problem when it comes to slums and is markedly less than access to other basic services. While, it is worthwhile to note that the proportion of people having access to sanitation in urban areas is considerably greater when compared to their rural counterparts, however the problems are more exacerbated in slums.

Urban sanitation is perceived as being important because of the health and decency is factor. In case of slums, it is observed that sanitation facilities are worst and in pathetic condition. A comprehensive view of the sanitary facilities as well as current sewerage system in the slums is shown in *Table 3-7:*

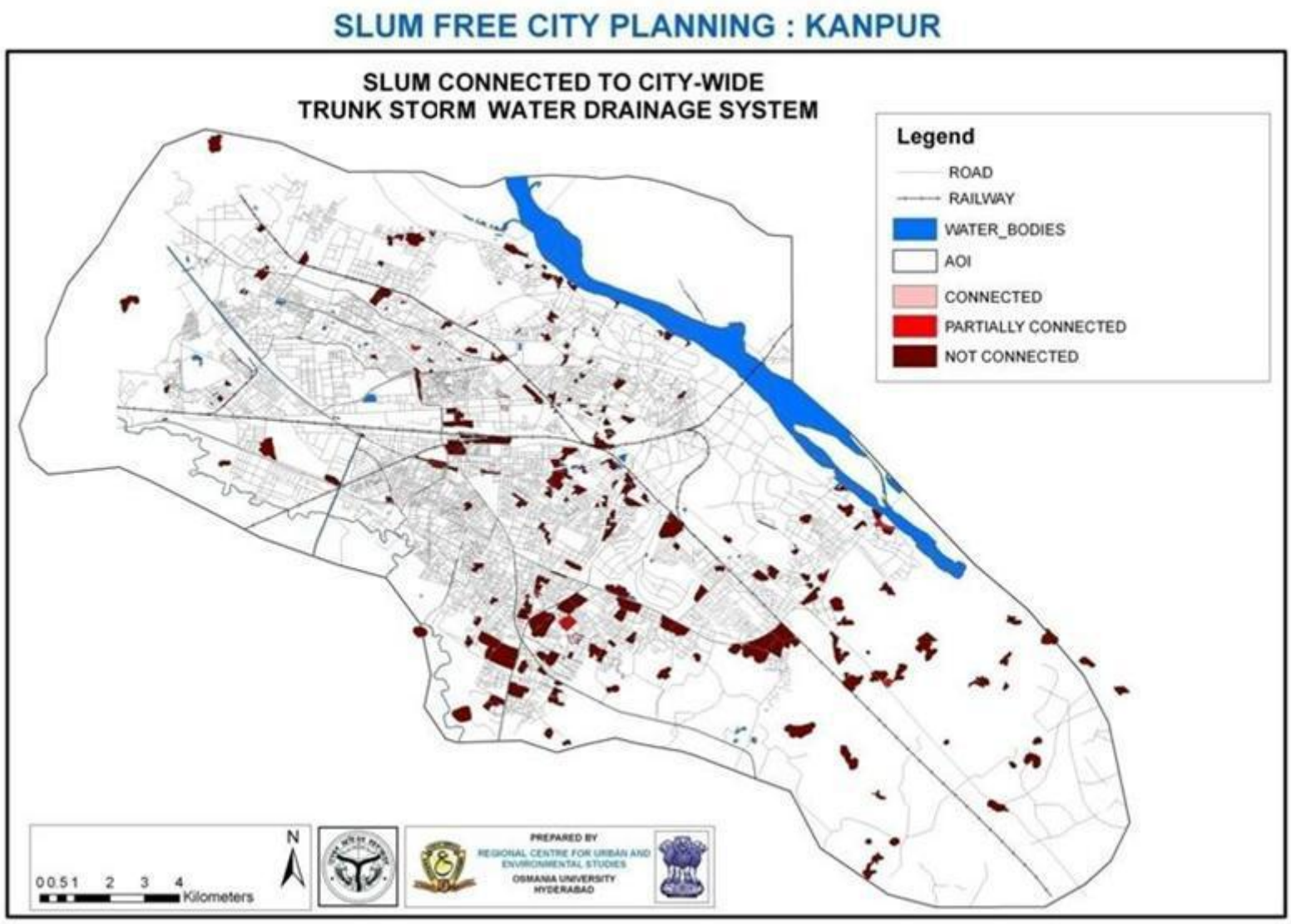
Table 3- 7 : Status of Sanitation in slums

DRIANAGE AND SEWERAGE FACILITY										
Type of facility	**Storm water drainage**			**Underground drainage / Sewer lines**			**Digester**			**Not connected to sewer or digester**
No. of Households	46270			14359			0			82040
CONNECTIVITY TO CITY WIDE STORM WATER DRIANAGE SYSTEM										
Status	**Fully Connected**			**Partially Connected**			**Not Connected**			
No. of Slums	155			231			26			
CONNECTIVITY TO CITY WIDE SEWARAGE SYSTEM										
Status	**Fully Connected**			**Partially Connected**			**Not Connected**			
No. of Slums	122			239			51			
LATRINE FACILITY USED BY HOUSEHOLDS										
Type of Latrine	**Public Community**			**Shared Latrine**			**Own latrine**			**Open Defication**
	Septic tank / flush	**Service latrine**	**Pit**	**Septic tank/ flush**	**Service latrine**	**Pit**	**Septic tank/ flush**	**Service latrine**	**Pit**	
No. of Households	9408	10024	941	4042	2680	1788	29825	13660	7678	72078

Source: RAY Primary Survey, 2011

a. Connectivity to City wide Storm water drainage

In regard with connectivity of slums with city wide storm water system, about 38% of the slums are fully connected and 56% of slums are partially linked to the system. The rest 6% of the slums does not have connectivity to the city wide system. Given the situation, it is necessary to improve the system as well as provide newer connections before it infiltrates into the environment.



Map 3- 6: Location of Slums in Kanpur w.r.to connection with city wide Storm water drainage system

Picture 3- 13 : Storm Water Drianage in Satya Prakash Slum

Picture 3- 14 : Storm water drainage flowing in Matadin Sarju

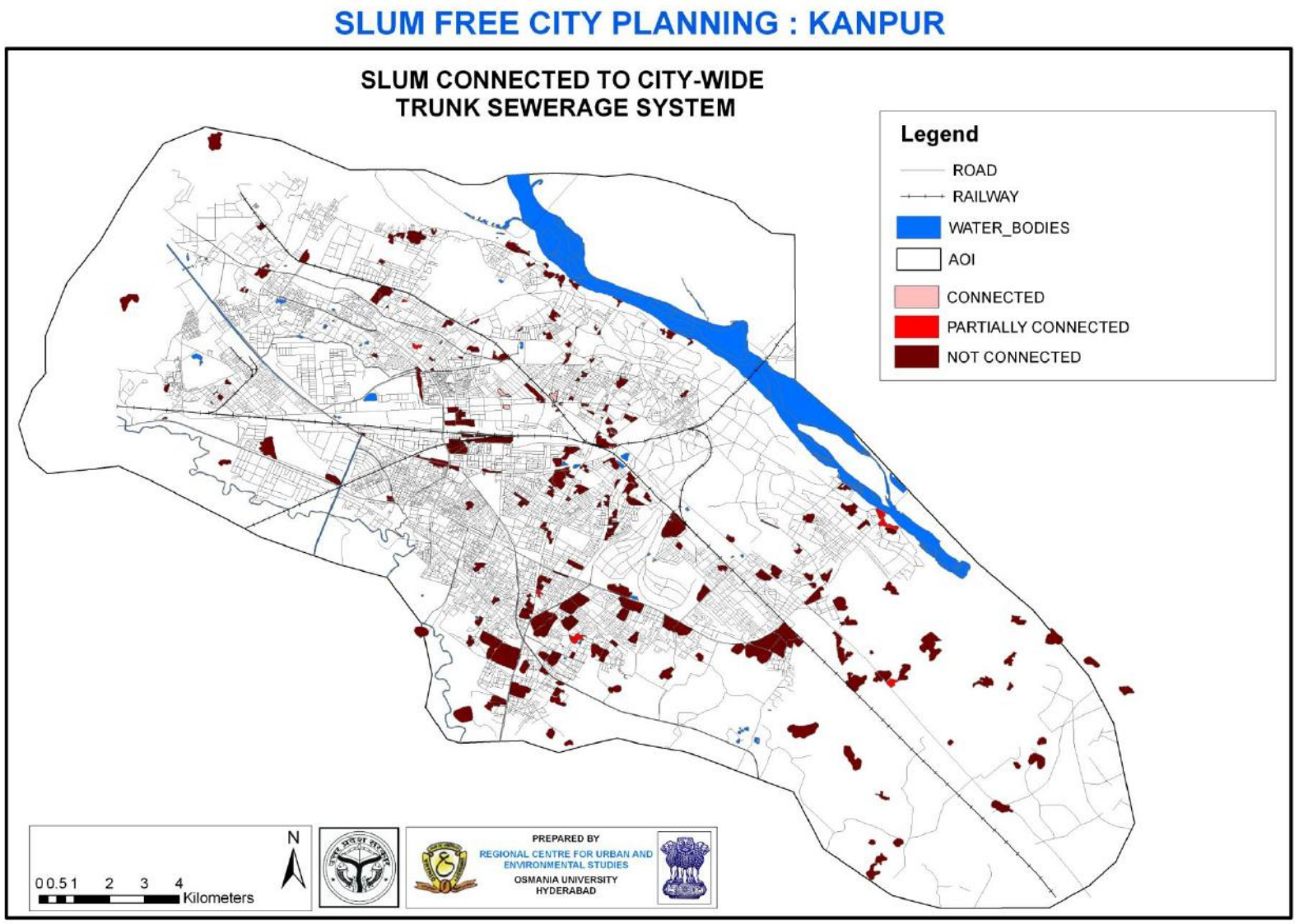
Picture 3- 15 : View of Choked storm water drain in a slum, Kanpur

Picture 3- 16 : View of broken drainage pipeline in a slum, Kanpur

b. Connectivity to City wide trunk Sewerage System

In respect to connectivity of slum with the city wide sewerage system, only 30% of the slums are fully connected to city wide sewerage system while 58% slums are partially connected. There is shortage of the system where 12% slums are not connected.

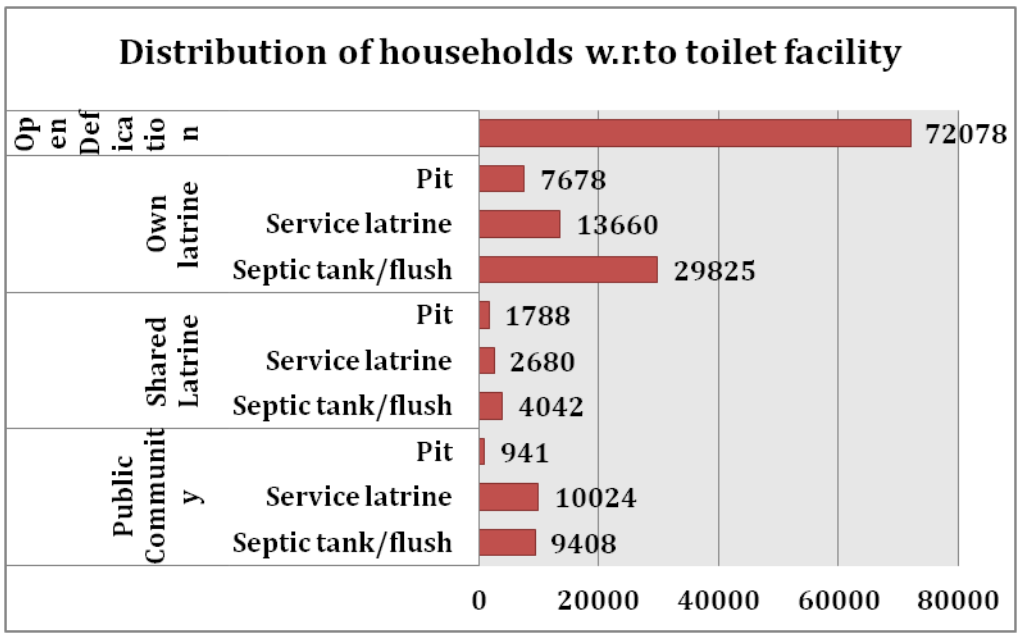
The *Map 3-7* presents the status of the slums that connected to city wide sewerage system.



Map 3- 7 : Location of Slums in Kanpur w.r.to connection with city wide trunk Sewerage system

c. Distribution of Households by use of different type of toilet facilities

Access to toilet/latrine is one of the basic necessities and is an indicator used for measuring quality. In Indian context three different types of toilets were usually used viz., pit, service latrine, and septic tank/flush. Three different ways of access to toilet was considered viz., own latrines, shared latrines and public community toilets. In lack of access to these facilities, the practice of open defecation is widespread.



Source: RAY primary survey, 2011

Figure 3- 10: Distribution of Households w.r.to type of toilet use

As evident in *Figure 3-10,* about 34% of the slum households have access to own latrine with septic tank/flush type of latrine. A low proportion of 13% households use Public latrines and 6% households use public use. An alarming share of about 47% slum house holds practice defication which leads to unhygenic environment and health related problems

Even though 53% of the households have access to some form of toilet, it is believed the exisitng toilet system is considered to be of primitive stage with no proper maintenance and lacks general hygienic condition, further deteriorating the environment.

3.6.3 Solid waste management

Well functioning and safe solid waste management system in slums is vital to minimize the health hazards and the environmental pollution.In many areas, garbage disposal services are jagged and sometimes not available. People are forced to live in such environment. An efficient, safe and proper dispose of solid waste generated is the prior need for city, community/slum development.

Table 3- 8 : Status of Municipal Solid waste management in slums

ACTIVITY	No. of SLUMS
FREQUENCY OF GARBAGE DISPOSAL	
Daily	173
Once in 2 days	49
Once in a week	49
Once in 15 days	39
No collection	102
ARRANGEMENT OF GARBAGE DISPOSAL	
Municipal staff	180
Municipal Contractor	112
Residents themselves	27
Others	5
No arrangement	88
FREQUENCY OF CLEARANCE OF OPEN DRAINS	
Daily	112
Once in 2 days	68
Once in a week	86
Once in 15 days	45
No clearance	101

Source: RAY primary survey, 2011

a. Frequency of Solid waste disposal

The *Table 3-8* gives an overall picture of the solid waste management in slums, about 42% of slums have daily clearance of garbage,12% of slums have once in a 2 days and in 21% of slums the waste is collected once in a week or even more. In about 25% of the slums the collection of waste is totally absent. Though the collection of waste is taking place in few slums, majority of the slum areas are found to be affected with insanitary conditions, which require immediate attention from concerned authority.

Picture 3- 17 : Garbage collection bins near Mati Ullalari slum

Picture 3- 18 : Uncleared garbage in Satya prakash slum

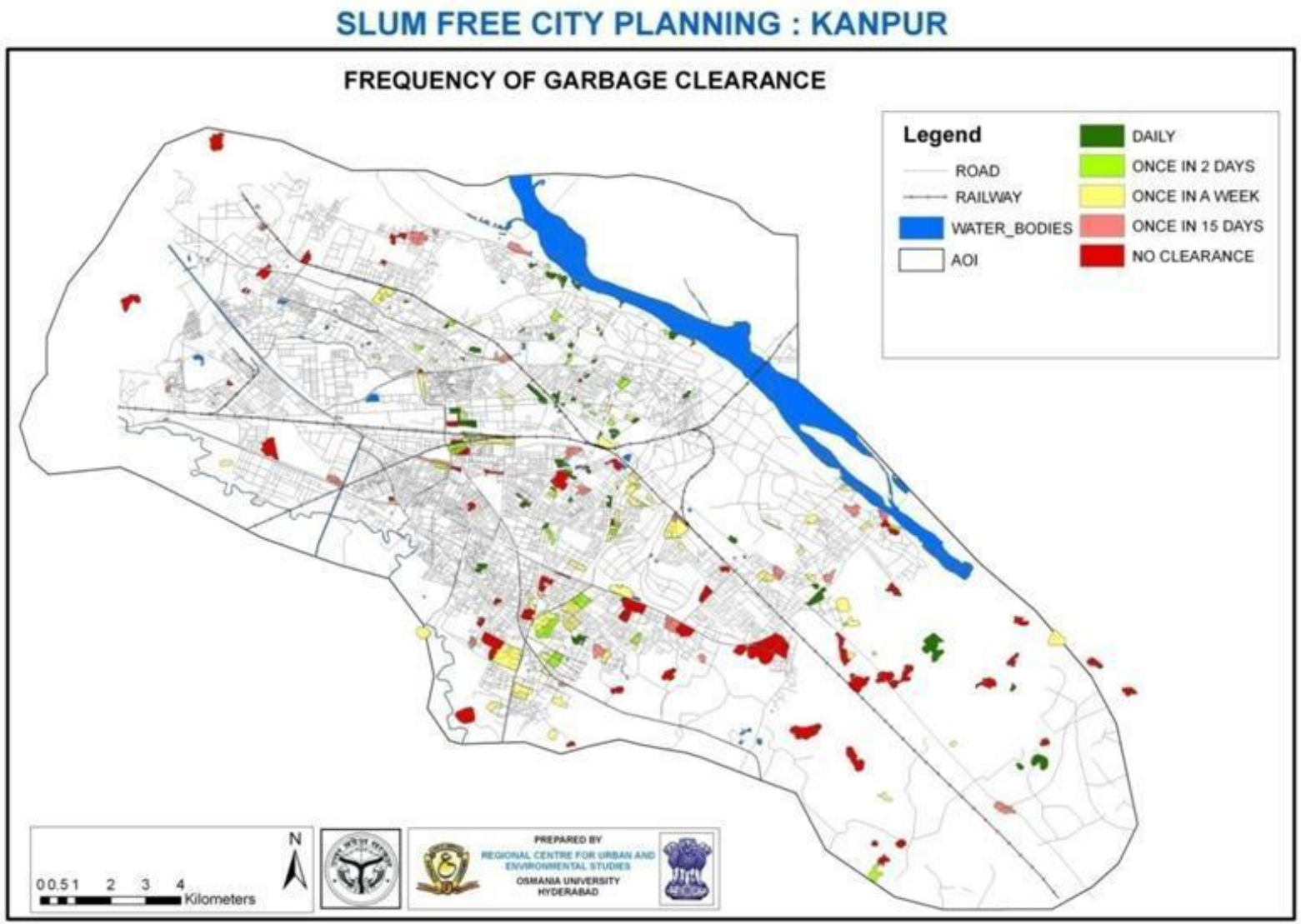
b. Arrangement of Garbage Disposal

As shown in the *Table 3-8*, in 44% of the slums, the solid waste disposal activity is handled by the municipal staff and 27% of the disposal arrangement is through respective municipal contractors. In areas where there is lack of solid waste disposal or collection, the disposal activity is taken by the residents themselves. In 21% of slums the collection and disposal of waste by municipal staff/private contractor is totally absent. The existing condition of solid waste management in slums reflects the necessity for increased staff and regular clearance to avoid the unsanitary conditions.

c. Frequency of Clearance of Open drains

In respect with the clearance of open drains, 27% of the slums have daily clearance of open drain; in 21% of slums the clearance takes place once in a week, 17% of slums once in 2 days. In about 11% of the slums the clearance takes place either once is every 15 days. In about 25% of the slums the collection of waste is totally absent, further deteriorating environmental conditions and contaminating the ground water.

For slum wise details, please refer Annexure-1E on Physical Infrastructure details.



Map 3- 8: Distribution of slums in Kanpur city w.r.to Frequency of Garbage clearance

3.6.4 Roads – Condition & Connectivity

As about 65% of the slums in the city are located either in core city or near industries which are well connected to the motorable pucca approach roads with in a distance of 0.5 kms. But, for the reasons of street vending, parking of cycle & auto rickshaw, high pedestrian movement etc., the roads were very congested in the core area of the city. Majority of the slums in the city are situated in the vicinity of major transport alignments, near the industrial area, along the major drains and near to railway track. Though majority of the slums are well connected by approach roads, the condition of the internal roads in the slums are in bad state. The *Table 3-9* shows the existing statistics of road network in slums.

Table 3- 9 : Existing condition of Road network in slums

	No. of Slums
APPROACH ROAD/LANE/CONSTRUCTED PATH OF THE SLUM	
Motorable Pucca	215
Motorable Kutcha	93
Non-Motorable Pucca	51
Non-Motorable Kutcha	53
DISTANCE ROM THE NEAREST MORTORABLE ROAD	
Less than 0.5 Km	302
0.5 to 1.0 km.	65
1.0 km to 2.0 km.	15
2.0 km to 5.0 km.	24
more than 5.0 km	6
CONDITION OF INTERNAL ROADS	
Motorable pucca	154
Motorable kutcha	114
Non-Motorable pucca	81
Non-Motorable kutcha	63

Source: RAY Primary Survey, 2011

a. Nature of Approach Roads

By and large, 52% of slums in the city are provided/connected with Motorable Pucca roads and 23% are connected with approach roads being Motorable Kutcha in nature. The remaining 25% of slums connected with Non Motorable Pucca and Kutcha roads. There is a need to upgrade these roads. The *map 3-9* shows the type of approach road provided to the slums.

b. Distance from nearest Motorable road

Around 73% of the slums have access to the nearest Motorable road within 0.5 Km and 16% between 0.5 Km to 1 Km. For 20% of the slums, the nearest approach road is at the distance less than 2 km and 7% of the slums have access to the distance more than 2km.

Picture 3- 19 : Motorable Katcha approach road to a slum, Kanpur

Picture 3- 20 : Motorable Pucca Approach road to a slum, Kanpur

c. Type of Internal road

In respect to internal roads in the slums, 37% of the slums have Motorable Pucca internal roads while 28% have katcha internal roads. Around 35% of the slums lack in proper internal roads with BT surface.

Picture 3- 21 : Non-Motorable Pucca internal road to a slum, Kanpur

Picture 3- 22 : Non-Motorable katcha internal road to a slum, Kanpur

3.6.5 Street Lighting Facility

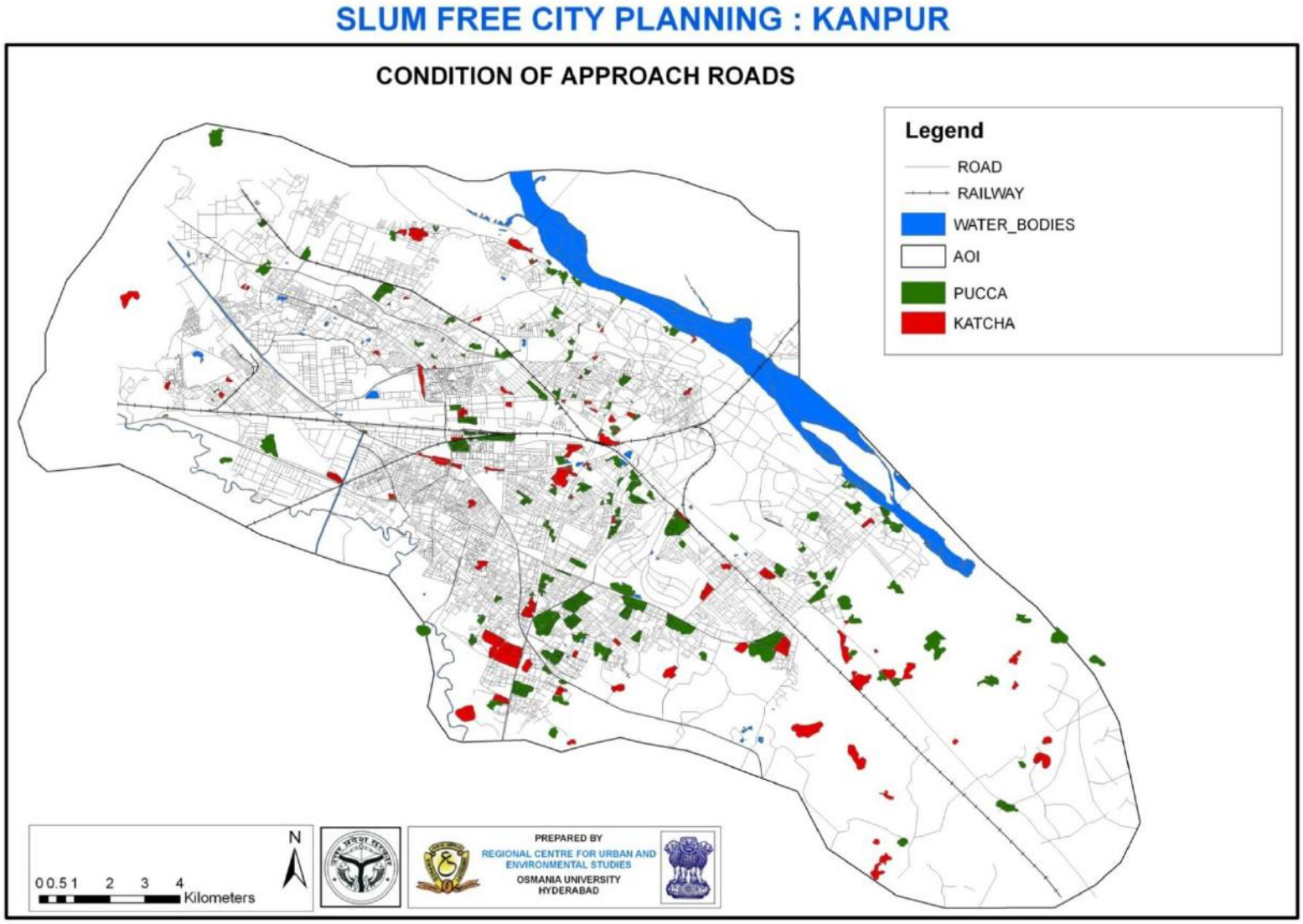
Table 3- 10 : Availability of Street lighting Facility

	No. of Slums
AVAILABILTY OF STREET LIGHTING FACILITY IN SLUM	
Yes	385
No	27

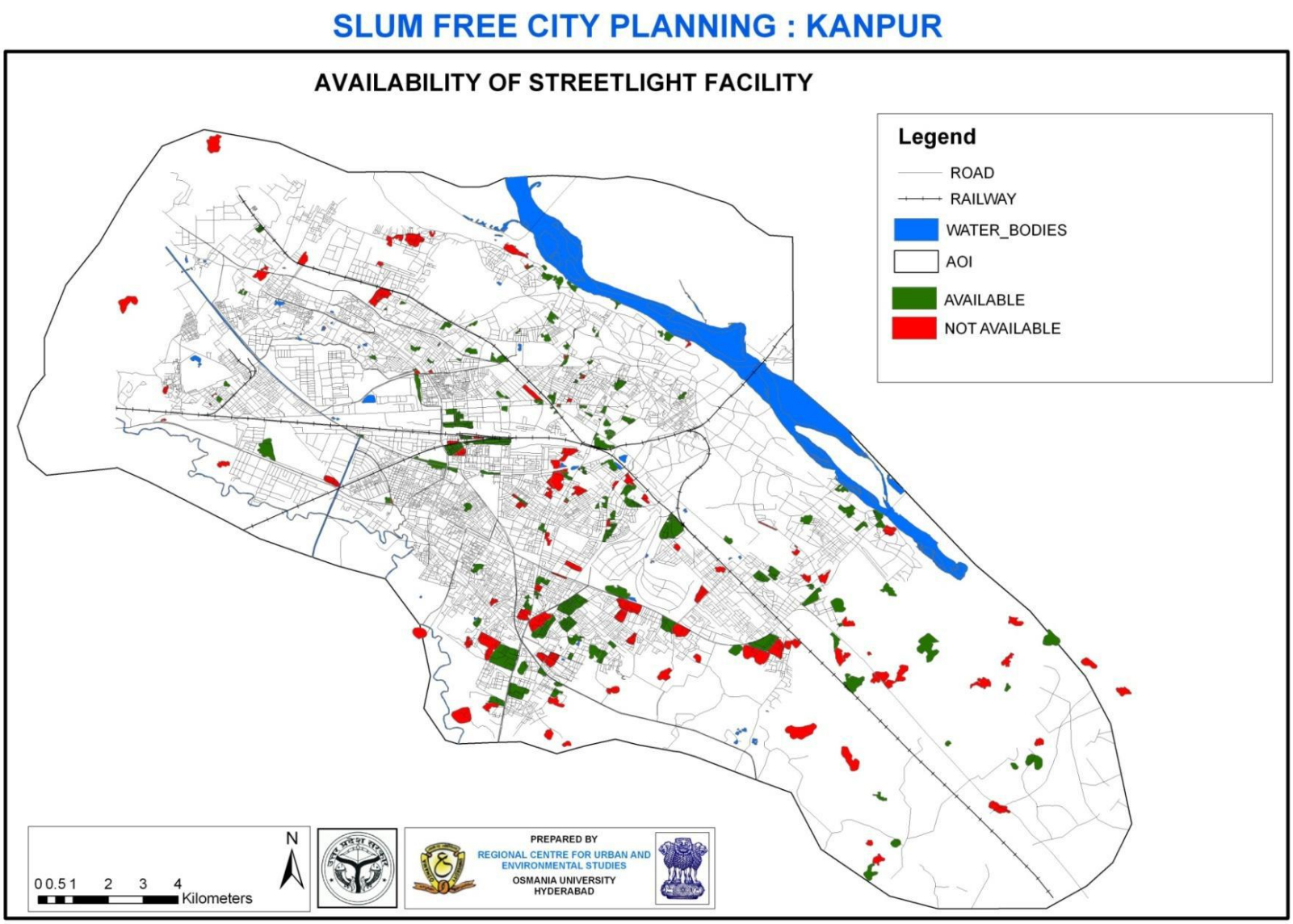
Source: RAY primary survey, 2011

According to Annexure -1 survey, 93% of the slums have street lighting facilities, not all of which are in working condition and found to be insufficient. For the 7% of the slums, there is no street lighting facility, hence essential to for security, to prevent any kind of accidents and other inconveniences.

For slum wise details, please refer Annexure-1F on Roads & Street lights.



Map 3- 9 : Condition of Approach roads in slums



Map 3- 10 : Availability of Street light facility in slums

3.7 SOCIAL INFRASTRUCTURE

The quality of life in any urban centre depends upon the availability of and accessibility to quality social infrastructure. Development of social infrastructure includes education, health, social welfare, livelihood centers and recreational facilities, instrumental in contributing to substantial improvements in physical quality of life, which in turn, initiates and accelerates economic development in a city. The following are a list of elements that forms the social infrastructure:

- Educational facilities
- Health facilities
- Community halls & rooms
- Livelihood centers
- Youth centers
- Social welfare facilities
- Old age homes
- Night shelter
- Parks
- Public utilities such as fire services

Following section details out the current level of social infrastructure available to the slum households.

3.7.1 Education facilities

Table 3- 11 : Distance of the slums from the nearest Anganwadi and Pre-primary schools

Distance	Within the slum	< 0.5KM	0.5 to 1.0 KM	1.0-2.0 KM	More than 2 Km
Pre- Primary Schools (Anganwadi)					
No of slums	200	74	34	16	88
Pre- Primary Schools (Municipal)					
No of slums	62	65	65	30	190
Pre- Primary Schools (Private)					
No of slums	101	100	58	23	130

Source: RAY primary survey, 2011

Anganwadi is a part of the Indian public health care system. The responsibility of Anganwadi workers includes basic health care activities like contraceptive counseling and supply, nutrition education and supplementation, as well as pre-school activities. The access to Anganwadi is very essential especially in places like slums where children, pregnant women suffer with lack of proper nutritional diet. As indicated in *Table 3-11*, about 49% of slums have Anganwadi facility within the slum area. For about 18% of slums the facility is located within a reachable distance of 0.5 kms. For the remaining 12% of slums the facility is located at a distance of 0.5 to 2kms. In total it is found that all the slums are having access to Anganwadi with in a distance of

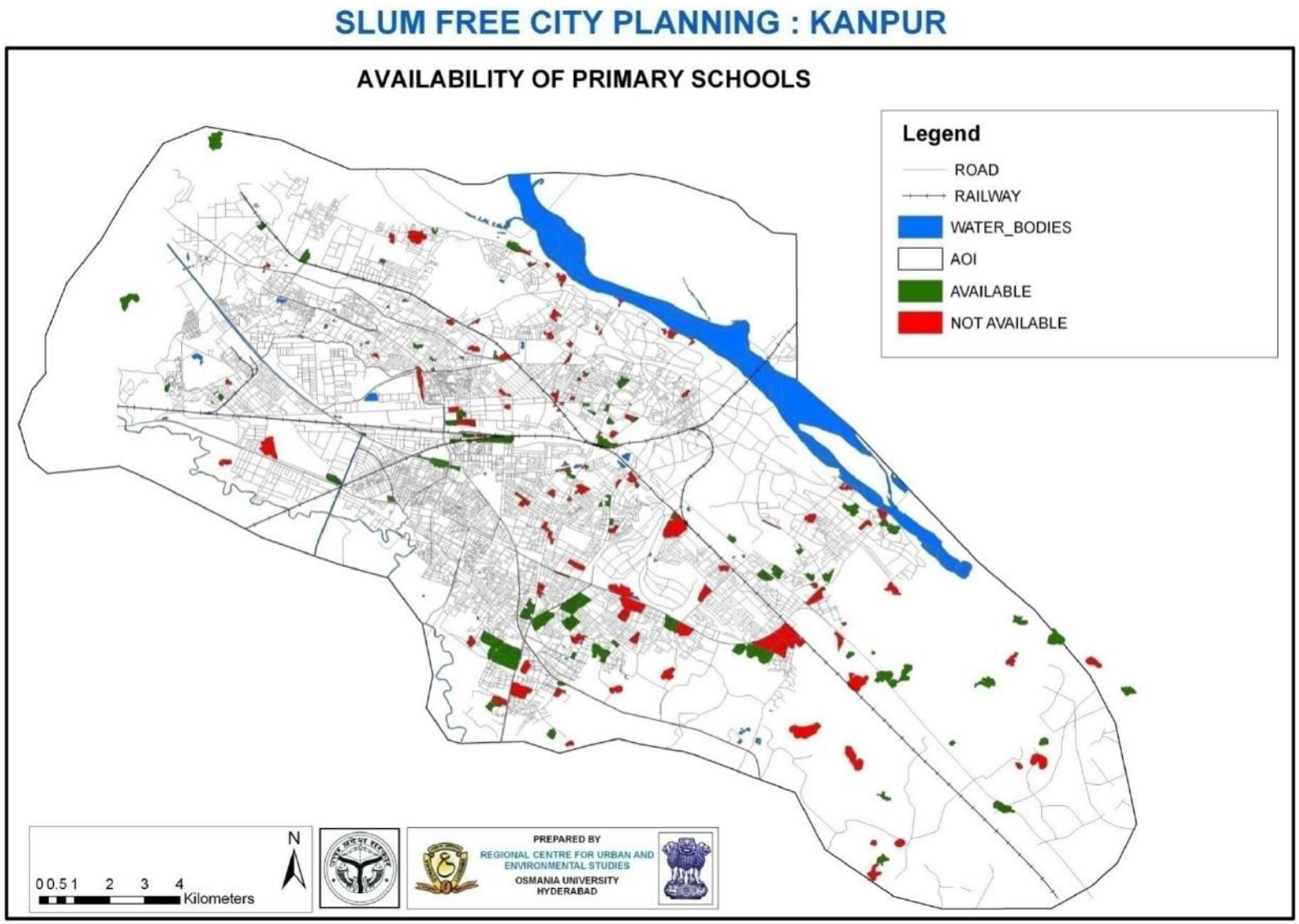
2 kms. A part from the Anganwadi, the pre-primary schools were found in many slums run by private people.

Table 3- 12 : Distance of slums from the nearest Primary and High schools

Distance	Within the slum area	< 0.5KM	0.5 to 1.0 KM	1.0-2.0 KM	More than 2 Km
Primary Schools (Municipal)					
No of slums	61	50	49	45	207
Primary Schools (State government)					
No of slums	25	45	50	42	250
Primary Schools (Private)					
No of slums	113	106	42	36	115
High Schools (Municipal)					
No of slums	16	34	30	51	281
High Schools (State government)					
No of slums	18	44	37	40	273
High Schools (Private)					
No of slums	85	110	43	29	145

Source: RAY Primary Survey, 2011

As shown in *Table 3-12*, in 25 slums the primary schools run by state government are located within the slums. The majority of the slums have access to primary schools run by state government within a distance of 0.5 km to 2 km. A part from primary schools run by state government, the slums have access to primary schools run by private people. In the same line, the slums have access to high schools run by both state government and private with in a considerable distance of less than 2 kms.



Map 3- 11 : Availability of Primary schools in slums

3.7.2 Health facilities

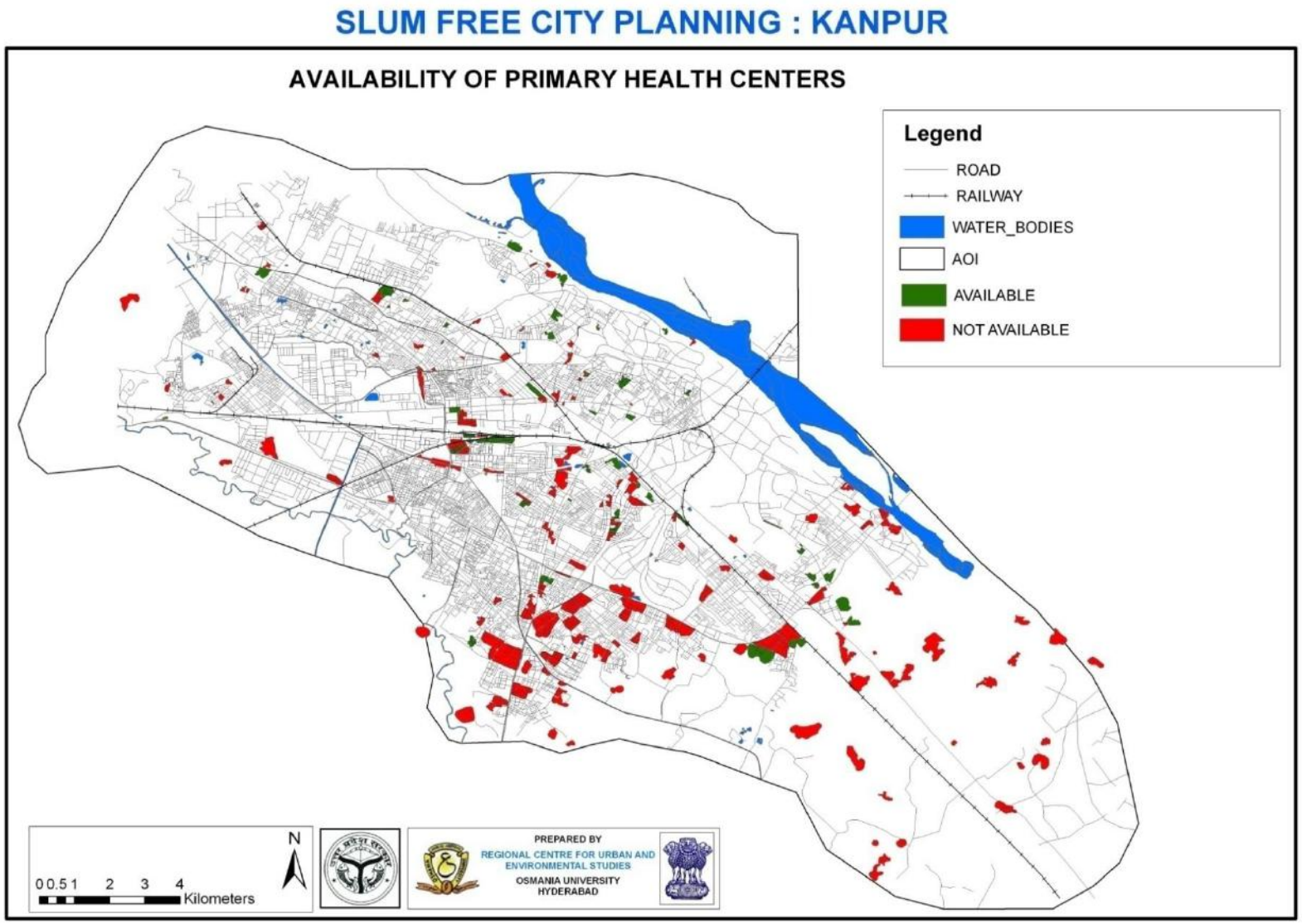
Majority of the health problems in urban slums stem from lack of access to or demand for basic amenities. Basic service provisions are either absent or inadequate in slums. Lack of drinking water, clean, sanitary environment and adequate housing and garbage disposal pose series of threats to the health of slum dwellers, women and children in particular, as they spend most of their time in and around the unhygienic environment. Inadequate nutritional intake due to non-availability of subsidized ration or availability of poor quality to ration makes the slum dwellers prone to large number of infections and lack of education or information, further aggravates the situation.

Table 3- 13 : Distance of slums from the nearest Health facilities

Distance	Within the slum area	< 0.5KM	0.5 to 1.0 KM	1.0-2.0 KM	More than > 2.0 Km
Urban Health post					
No. of Slums	10	91	40	11	**260**
Primary Health Centre					
No. of Slums	6	84	71	58	**193**
Government Hospital					
No. of Slums	3	35	46	74	**254**
Maternity Centre					
No. of Slums	12	57	35	80	**228**
Private Clinic					
No. of Slums	118	139	35	17	**103**
Registered Medical Practitioner (RMP)					
No. of Slums	98	118	29	18	**149**
Ayurvedic Doctor/Vaidhya					
No. of Slums	36	73	60	58	**185**

Source: RAY primary survey, 2011

As per Annexure –I data, 33% of the slums do not have access to any kind of health facilities. Within an accessible distance of 2kms, 53% of slums have primary health centre, 38% of the slums have Government Hospital and 37% of slums have urban health post. For about 75% of slums the private clinics are situated at an accessible distance. Health as well as medical facilities is provided and is serving the ailing people belonging to the slum areas item wise particulars are shown in *Table 3-13.*



Map 3- 12 : Availability of Primary Health facilities in slums

3.7.3 Social welfare facilities

Similar to the above sections in social infrastructure, the following *Table 3-14* presents availability of social welfare facilities in 412 slums:

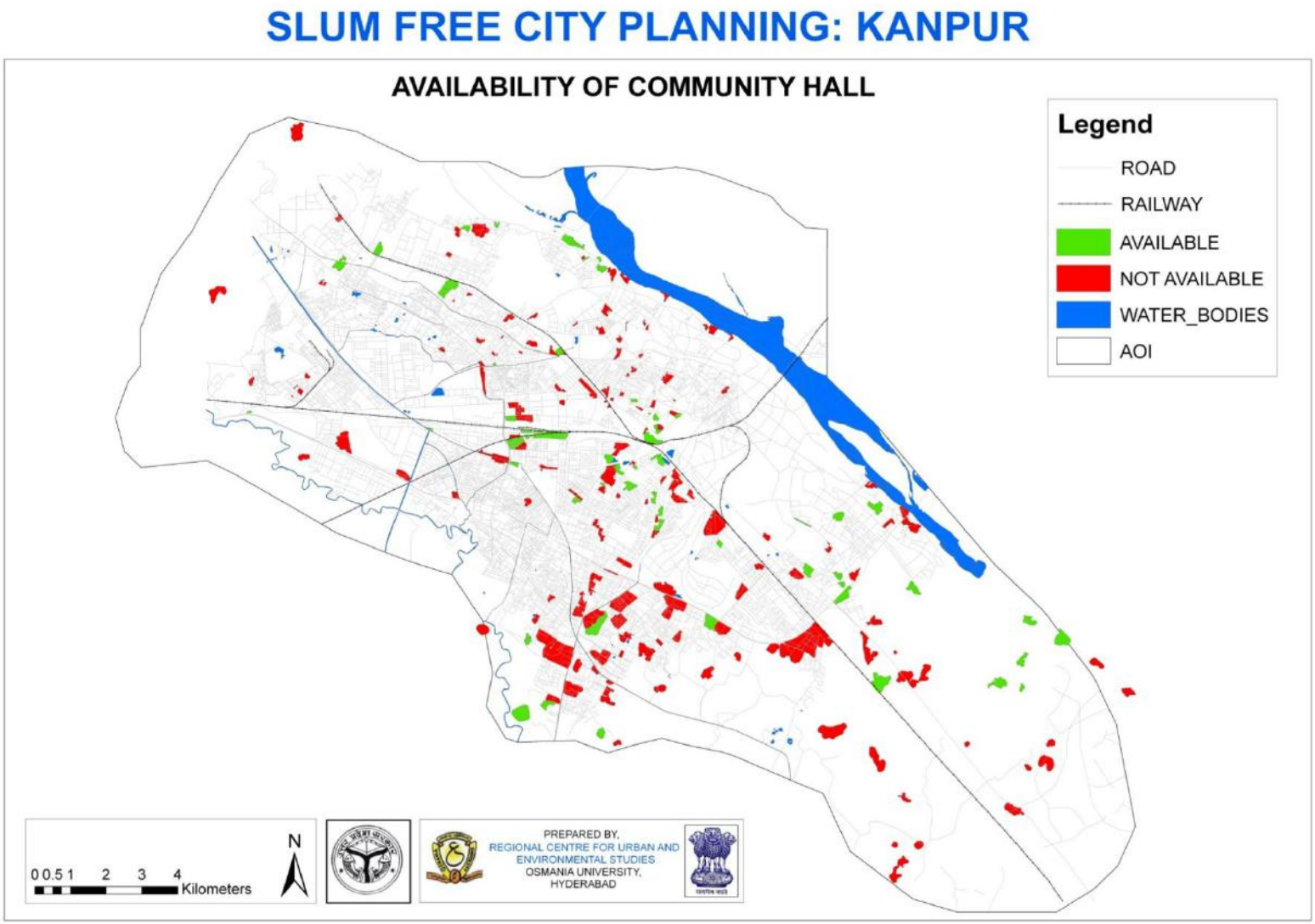
Table 3- 14 : Availability of Social Welfare facilities in slums

Social Welfare facilities	
Availability of Facilities within Slum	**No. of Slums**
Community Hall	91
Livelihood/Production Centre	107
Vocational training/Training-cum-production Centre	353
Street Children Rehabilitation Centre	5
Night Shelter	20
Old Age Home	14
Social Welfare Facilities	**No. of Holders**
Old Age Pensions (No. of Holders)	4661
Widow Pensions (No. of Holders)	3775
Disabled Pensions (No. of Holders)	1835
General Insurance (No. covered)	25359
Health Insurance (No. covered)	6043
Self Help Groups/DWCUA Groups in Slum	109
Thrift and Credit Societies in Slum	243
Slum-dwellers Association	**No. of Slums**
Slum dwellers Associations	90
Youth Associations	37
Women's Associations/ Mahila Samithis	196

Source: RAY primary survey, 2011

91 slums out of 412 have facility of community halls; 22% of the slums do not have slum dwellers association however 48% of the slums have women's associations to empower women with home based employment. In addition, slums do have self groups as well as credit societies.

For slum wise details, please refer Annexure-1F for Social Infrastructure



Map 3- 13 : Availability of Social Welfare facilities in Slums

CHAPTER 4 – SLUM REHABILITATION STRATEGY

4.1 REHABILITATION STRATEGY

The major factors that influence the design of upgrading programs are scale of the problem, the severity of conditions, tenure, and relevant support for social and economic development, community participation, the institutional framework, the financial structure, political will, and good governance. As part of community up-gradation, there are factors that need to be considered in the planning and implementation of initiatives. Most of the up-gradation programmes undertaken throughout the world are one of three types: provision of *basic infrastructure to the community, tenure security, and comprehensive up-gradation*. The appropriateness of their use is driven by the status of existing conditions in the slums.

First component is the provision of basic infrastructure to the community. Improvement of basic services is necessary when the environmental conditions and physical infrastructure are poor, but tenure is relatively secure. For improving the services, both the physical and social infrastructure elements such as sanitation, water supply, drainage, and often some community facilities are taken into account. This type of program tends to cost less per capita than more complex programs. The improvements can be financed easily by a program like RAY.

The second component is the incremental buildup of tenure security when the land tenure status is found to be insecure. In these circumstances, lack of tenure is a threat to the security of livelihoods, and a significant barrier to households investing in upgrading their own homes. The threat of forced evictions also looms over such settlements. In such cases rapid tenure regularization may lead to increased land values and, as a consequence, market driven displacement of beneficiaries. An incremental approach based on a 'continuum of land rights' and flexible tenure arrangements would be recommended. Temporary occupancy rights, lease agreements, possession rights, anti-eviction rights are among flexible and effective tenure systems that do not place unrealistic demands on local governments with weak resources, do not disrupt municipal land markets, and provide beneficiaries with adequate and incremental security of tenure. When and where it becomes appropriate and affordable, lot titling through the sale or allotment of land should be considered as a way of providing the strongest form of tenure security.

The third type of upgrading program – a mixture of the previous two – is comprehensive upgrading. It combines both provision of basic infrastructure and tenure security. It is appropriate where environmental conditions and physical infrastructure is poor, where population densities are high, and where tenure is insecure.

The comprehensive upgrading program is relatively complex and time-consuming because it has more administrative requirements, implicates more stakeholders, and depends on greater community involvement.

In order to best apply RAY objectives and create Kanpur a Slum free city, an imperative slum rehabilitation strategy would be necessary depending on the expected outcomes from the findings or analysis of existing slum situation of a city.

The rehabilitation strategy comprises of several components such as:

- Physical targets – relocation, in-situ and up gradation
- Law and legislation for slum dwellers
- Stakeholder/ community participation
- Financial framework
- Institutional mechanism

The following flowchart details the rehabilitation proposed for Slum free Kanpur.

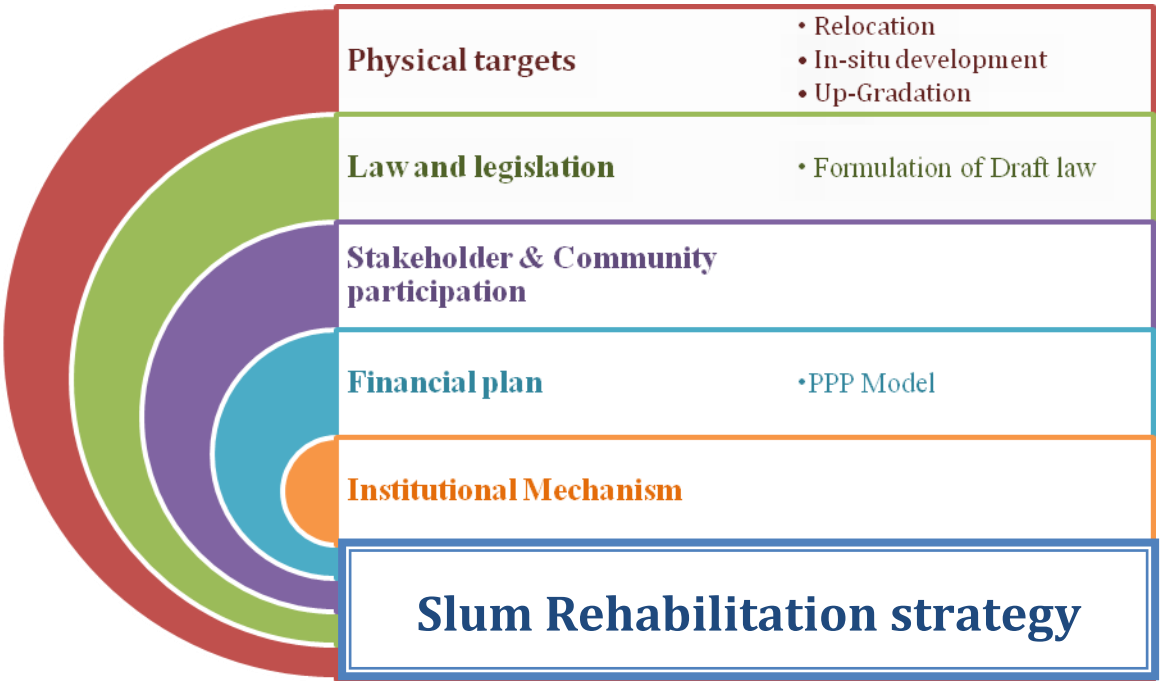


Chart 4- 1: Components of Slum Rehabilitation strategy

4.1.1 Physical Targets

For the slum rehabilitation, the top most priority would be given to the redevelopment/ rehabilitation of identified slums and measures to prevent future slums. The following three options of redevelopment that will be categorized based housing tenure, tenability, physical location, density and ownership:

a. Relocation mode

- Depending on the physical location of slums such as hazardous sites and environmental conditions and where there is no alternative
- Involves communities in identification of alternative sites
- Ensures that education, health, transport, basic services and infrastructure and provided before relocation

b. In situ mode

- Involves redevelopment of whole site to provide more living space and improved environmental conditions such as those in high density areas.
- Provision of transit accommodation and including of all residents, especially the extremely poor critical to success
- In this mode, new mixed-use mixed income communities can be created with a viable cross-subsidy model, which is a function of local land values, socio-economic needs and general context of the area.

c. Slum Up-gradation

- Involves a mixture of provision or upgrading of service and infrastructure levels, incremental housing improvements or selective replacement of katcha houses.

4.1.2 Law and Legislation

An appropriate legislation is a necessity to achieve and implement the development strategies formulated for Slum Free Kanpur. RAY promises a secured housing, provision of urban basic services helps the slums to become "slum free" through rehabilitation strategy. Legislation forms an important tool for Government to assign property rights, provide basic services and achieve the holistic mission of RAY. Hence, suitable implementable and customized legislation forms an integral part of Slum rehabilitation strategy.

a. Stakeholder/ community participation

It has been proved by several previous schemes for slum development that community /stakeholder participation is a key aspect in implementing rehabilitation strategy to achieve Slum Free Kanpur. Community Participation calls for a strong and active participatory chain which would be involved throughout the implementation of RAY starting from surveys until project implementation and monitoring. This particular strategy would actually make the slum dwellers realize the motive behind the programme as an opportunity to raise their standard of living, achieve higher dignity and provide better facilities for present as well as future families. Community participation strategy is a promising bridge between the governments and the beneficiaries to understand the mutual benefits of the programme.

b. Financial framework

RAY has posed a significant challenge to the state, ULB and beneficiaries by announcing its 50% contribution towards the project. This calls for development of exclusive financial development strategy to meet the remaining 50% finances through various sources and mechanism. The alternatives as proposed by Govt. of India.

The development strategy has been finalized after careful observations/scores that have been evolved through derived matrix preparation according to the Govt. of India guidelines. The strategy would enable the most needed slums to be taken care in first year in a strategic manner

and continue to do so in the coming five years. The strategically financial framework would enable the project implementation smoothly without any finance hurdle.

c. Institutional mechanism

RAY is a challenging task right from policy making until project implementation and monitoring. However the city should comprise of several teams which have to be coordinated within each other and successfully channelize step by step. The roles vary from Center, State, ULB, Slum clearance boards, RAY technical cell, NGOs and other associated agencies. The city should be able to actively involve the various agencies with various tasks as the programme advances yearly. There has to be hiring done at necessary levels/positions to complete coordination cycle. Hence institutional mechanism enables and proves to be a significant strategy for slum rehabilitation.

It is a necessary exercise to assess the existing slums to propose for a development strategy. A matrix analysis was prepared for Kanpur slums to identify the level of urban services. The matrix details the infrastructure and housing services among the slums.

4.1.3 Infrastructure Deficiency and Vulnerability Matrix

According to RAY guidelines, an infrastructure deficiency and vulnerable matrix the existing slums is to be prepared using the scoring and ranking method. The matrix is based on three important parameters: Housing, Infrastructure, BPL, SC/ST population. Within these, Housing and Infrastructure are the physical parameters that are directly related to the existing quality of the housing condition.

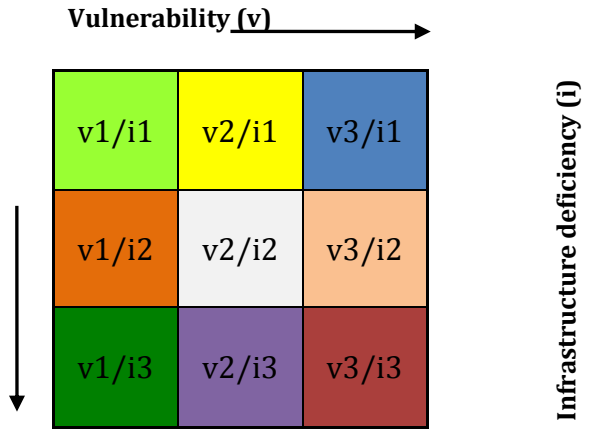


Figure 4- 1 : Model Infrastructure deficiency and vulnerability matrix

For evaluating infrastructure deficiency and vulnerability the following parameters are considered:

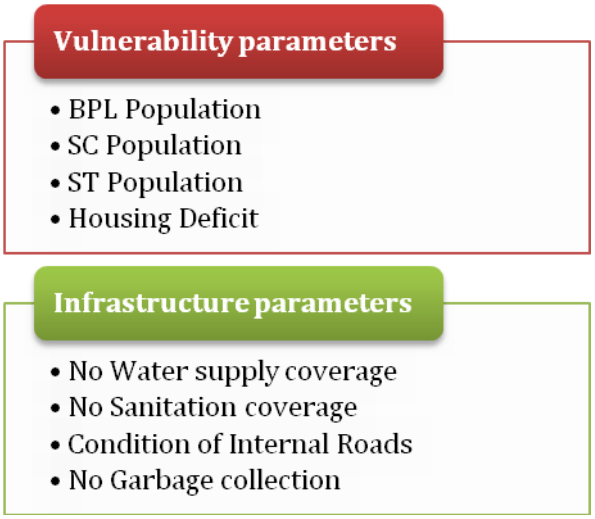
Infrastructure deficiency parameters:

i. Percentage of households not covered with piped water supply
ii. Percentage of households not covered with individual toilets
iii. Percentage deficiency of condition of internal roads

iv. Percentage of households without access to facilities of disposal of solid waste.

Vulnerability Parameters

i. Housing condition based on structural condition (Pucca, Semi-Pucca and Katcha)
ii. Below the poverty line (BPL) Population, SC/ST population
iii. The scoring is provided to all the slums by comparing the infrastructure deficiency and vulnerability parameters against the same criteria. The average scores for vulnerability and infrastructure are determined separately and clustered into different ranges representing the worst, average and best slum settlements. For that 5 percentage ranges from 100 to 0 with an interval of 20 is considered and the scores were provided accordingly and represented in the matrix.



Percentage range	Score
100 - 80	1
81 - 60	2
61 - 40	3
41 - 20	4
21 - 0	5

Chart 4- 2: Vulnerability and Infrastructure deficiency parameters

Based on the above individual scores, a final composite score for each slum is calculated using the parameters infrastructure and vulnerability. Once the score is obtained, the slums are then classified into:

- Least vulnerable and Good Infrastructure
- Least vulnerable with moderate infrastructure
- Least vulnerable with bad infrastructure
- Moderate vulnerable with Good Infrastructure
- Moderate vulnerable with Moderate Infrastructure
- Moderate vulnerable with Bad Infrastructure
- Most vulnerable with Good Infrastructure
- Most vulnerable with Moderate Infrastructure
- Most vulnerable with Bad Infrastructure

4.2 SLUM CATEGORIZATION

The Categorization of Slums is done based on the scoring and ranking method where certain parameters are taken into account to identify the deficiencies and make suitable decisions. The

three important parameters that play equal role in determining the slums that are deficient are **Housing, Infrastructure and Tenure status**. In this section, the following parameters such as ***Tenability, Abutting Land use, Tenure status, Ownership of the land, density and land value*** *are being discussed.*

4.2.1 Tenability

As a first step, the slums and vacant lands will be categorized as tenable, semi-tenable or untenable. Untenable slums will be only those which are 'unsafe' or 'health hazard' to the inhabitants or to their neighborhoods, even if redeveloped. Such untenable sites or portions will be earmarked for relocation to other redevelopment/vacant sites, preferably within the same zone.

Table 4- 1: Categorization of slums based on tenability

Status	Tenable	Semi - Tenable	Un- Tenable
No of Slums	241	138	33

Of 412 slums in the city, 241 slums are tenable and 138 slums are semi – tenable due to surrounding non – residential land uses and any other land and 33 are Un-tenable for human habitation. In order to make these slums tenable it is recommended to change the present land use zoning, however it will be decided by competent authority.

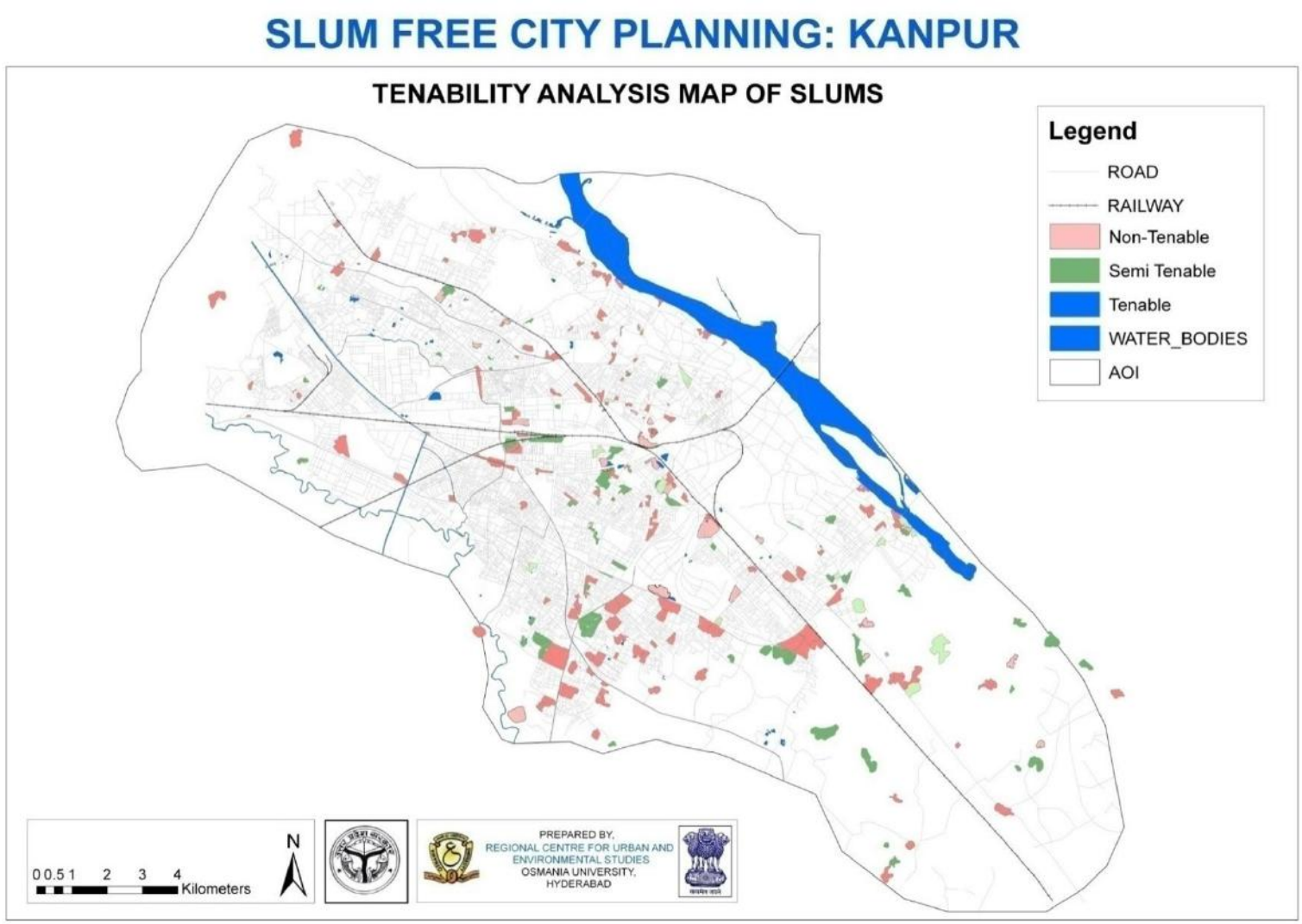
For visual illustration of tenability analysis of slums, please refer *Map 4-1* and for slum wise details refer **Annexure – 1A**

4.2.2 Abutting Land use

Table 4- 2: Categorization of slums based on abutting status

Legal Status/ Land use	Notified		Non - Notified		Total		Slums in category as % of Total Number of Slums	Households in category in % terms of Total Number of slum Households
	No of slums	No of HHs	No of slums	No of HHs	No of slums	No of HHs		
Residential	56	26889	209	81158	265	108047	64%	71%
Industrial	7	1437	30	11272	37	12709	9%	8%
Commercial	29	6797	41	11815	70	18612	17%	12%
Institutional	0	0	2	496	2	496	0%	0%
Others	9	3092	29	9168	38	12260	9%	8%
Total	**101**	**38215**	**311**	**113909**	**412**	**152124**		

From the above *Table 4-2*, it is established that 71% of the households are situated in the areas surrounded by the residential use and 12% of the slum households are commercial use, 8% for Industrial use. To identify vacant lands for slum rehabilitation and prevention, the information to be procured is of vital importance to enable further classification of the slums based upon land value and to decide upon redevelopment models for each slum pocket.



Map 4- 1 : Categorization of slums based on Tenability

4.2.3 Land tenure of slums

The categorization based on land ownership of slums can be used in assigning strategies for development and priorities for implementation under various strategies for development. The following *table 4-3* classifies the legal status of the slum households based on the ownership and land tenure status.

Table 4- 3: Categorization of dwelling units in slums based on Land tenure status

Land tenure Status	Patta	Possession certificate	Encroached public land	Encroached private land	On Rent	Others
No. of dwelling units	16315	20312	13086	43930	15508	25240

As shown in the *Table 4-3*, about 15% of the slum households are registered with possession certificates while 12% are registered and have pattas for their respective lands. On the contrary, 11% of slum dwellers reside on rented lands. 43% of slums are encroached on public and private lands.

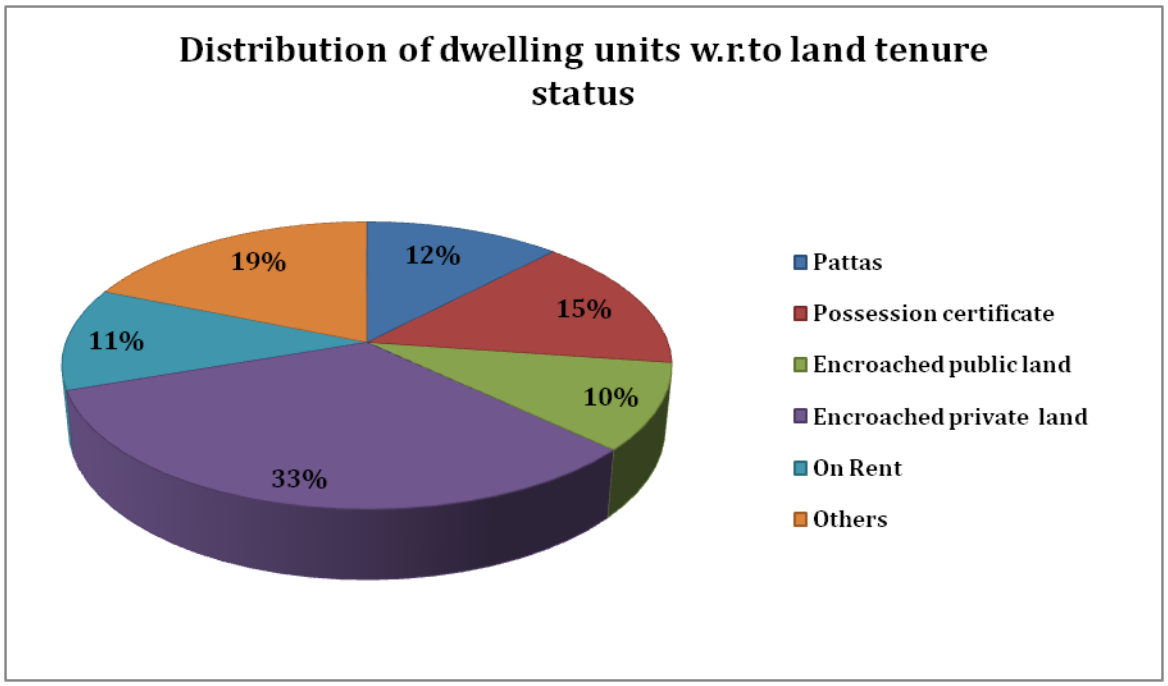


Figure 4- 2 : Distribution of dwelling units in slums w.r.to land tenure status

4.2.4 Ownership of Land

The categorization based on land ownership of slums can be used in assigning strategies for development and priorities for implementation under various strategies for development. The following *table 4-4* classifies the legal status of the slum households based on the ownership and land tenure status.

Table 4- 4: Categorization of dwelling units based on ownership of land in slums

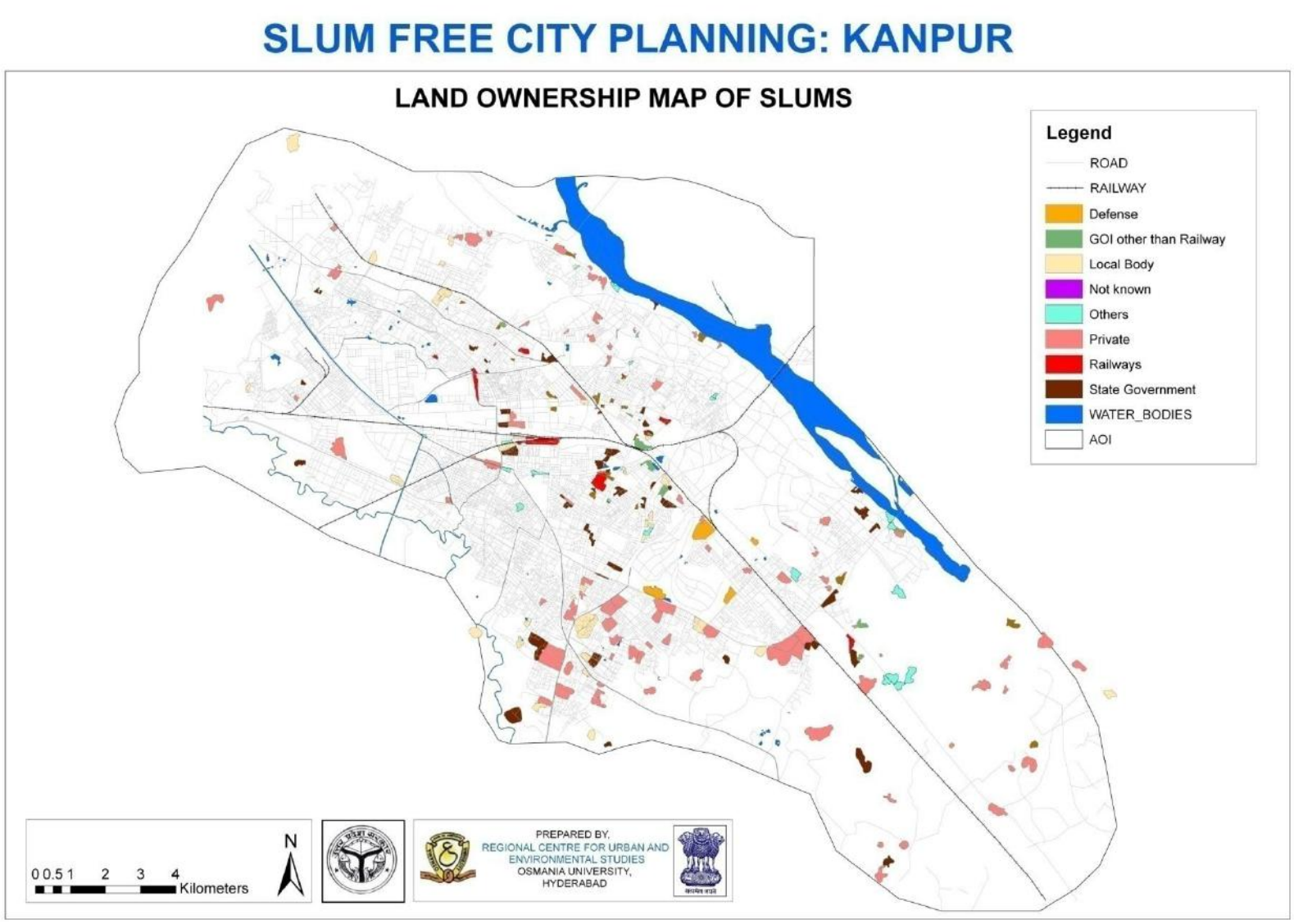
Ownership of Land/ Land tenure (No of HH's)		ULB	State government	Central government	Railways	Defense	Private	Others
Registered	Patta	3323	889	728	175	125	9099	1976
	Possession certificate	6205	3116	812	230	20	5539	4390
Un - Registered	Encroached	18600	11649	2404	6657	1002	8270	8434
	On Rent	5744	1945	620	713	30	3877	2579
	Others	11348	1720	733	930	38	7054	3417

About 27% of total households have registered and the remaining 73% are not registered with any agency. Under the ownership of ULB, 7% of the households are registered and 27% are unregistered. Similarly 7% are registered and 14% households are unregistered, belong to the private ownership of the land. Overall under the state and central Govt. owned lands, 1% belongs to registered and 3% to unregistered. Speaking of ownership, urban local body ownership is termed to be the highest with 34% of the households under it. Still 48% of the households need a secured status in order to avail better infrastructure.

Table 4- 5: Categorization of slums based of land ownership

Ownership of Land / Legal Status	ULB	State government	Central government	Railways / Airport	Defense	Private	Others
Notified No of Slums	96	0	1	1	0	1	2
Non - Notified No of Slums	56	62	16	22	5	94	56

About 23% of the notified slums and 14% of the non notified slums are under the ownership of ULB and in State govt. 15% of the notified slums. While on other side, 0.2 %(1 slum) of the notified and 23% of the Non-notified slums under private agencies, 5% of the non-notified slums under ownership of railways. It is also found that Local body makes the largest by owning of land with about 23% of notified slums and 14% of non-notified slums.



Map 4- 2 : Categorization of slums based on ownership of land

4.2.5 Dwelling unit Density

In this context, due consideration is given to existing density of each slum pocket in order to propose a suitable development option. Based on assessment of existing slum data analysis, the classification of the slums is based on the values of density where:

- **Low** where density is less than 350 dwelling unit per hectare
- **Medium** where density ranges from 350- 500 dwelling unit per hectare
- **High** where density is greater than 500 dwelling unit per hectare

The following *table 4-6*; presents the mode of development and additional accommodation of density for the slums based on its classification:

Table 4- 6: Categorization of slums based Dwelling unit density of slums

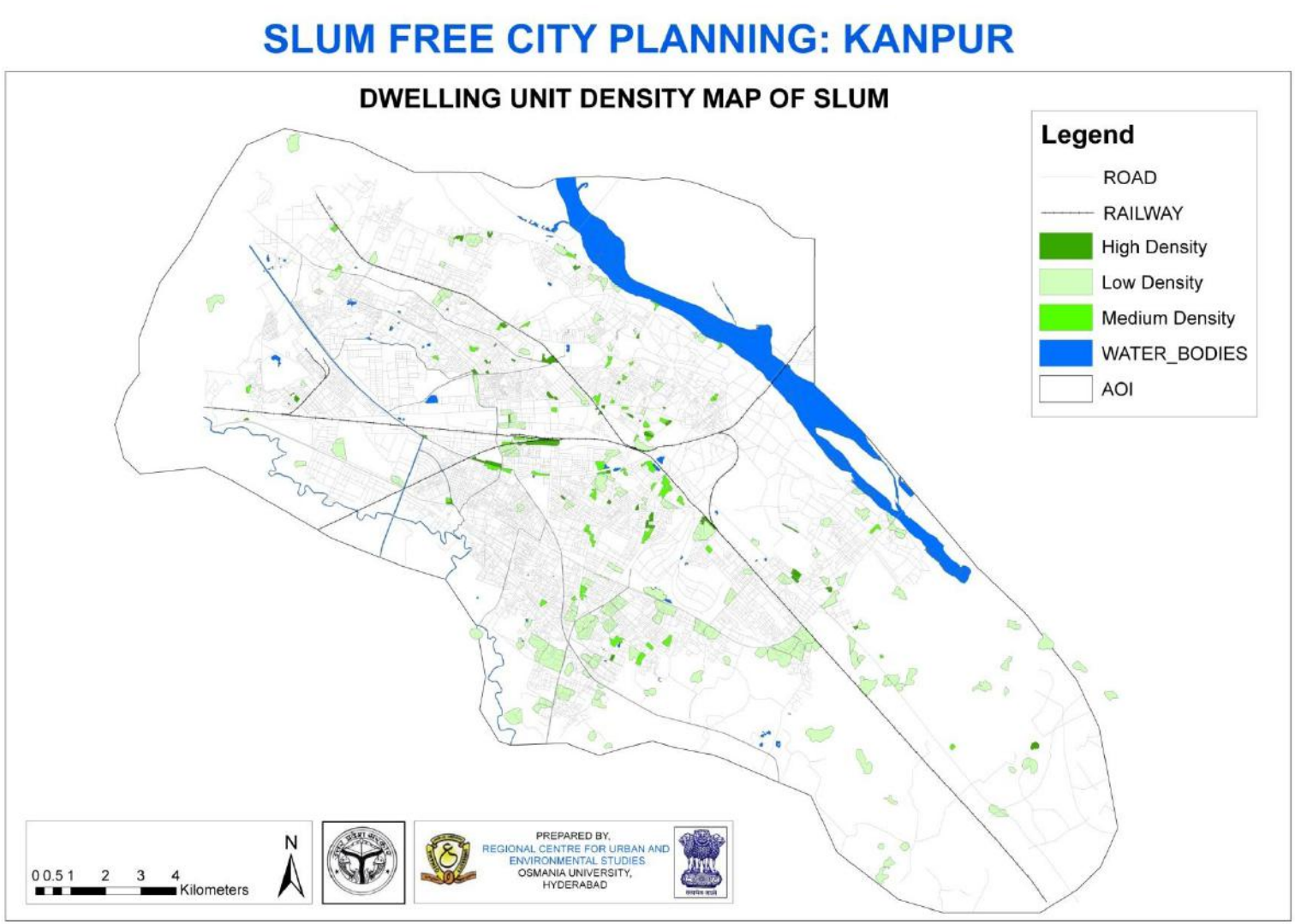
Mode of Development (No. of Slums)	Low Density	Medium Density	High Density	Total
Relocation	7	0	0	**7**
In - Situ development	103	8	7	**118**
Up gradation	214	19	54	**287**
Total No. of Slums	**324**	**27**	**61**	**412**

As per the analysis, it is found that 324 slums have low density while 61 slums are High density and the remaining pretty low. Out of 412 slums in the city, 287 were proposed for up gradation mode of development, 118 slums for In-situ development and the remaining 7 slums for relocation. Under the category of low density, 103 slums have been chosen for In-situ and 214 slums for up-gradation and 7 slums for relocation. At the same time, 61 slums which are moderately dense have selected for up-gradation mode with 54 slums and 7 slums for In-situ development. In Medium dwelling unit density slums, out of 27 slums, 8 slums are proposed for In-situ development and the remaining for up gradation.

For slum wise details please refer *Annexure - 2D*

4.2.6 Land value

For Kanpur City, the land values will be determined with reference to the slum and it is case specific and based on the mode of development, which will be calculated during preparation of DPR. At this is stage, it might be difficult to determine the land value as it is expected to vary in concord with market rate.



Map 4- 3 : Categorization of slums based on dwelling unit density of slums

4.3 SLUM REHABILITATION FRAMEWORK

According to RAY guidelines, analysis and prioritization of housing condition, infrastructure deficiency and vulnerability of slum settlements is evaluated based on scoring and ranking method. The matrix is based on two parameters: Infrastructure deficiency and Vulnerability. Apart from these parameters the housing condition, land tenure, slum tenability, land ownership, demography, employment etc., were considered.

4.3.1 Observations / Findings of Analysis of Existing Situation

a. Housing

- 73% of the slums have been into existence for more than 50 years in the city with old-fashioned infrastructure.
- 86 slums are situated along the open and storm water drains and 28 slums are on Hazardous/ objectionable sites.
- In about 13 slums, it is found that the rain water will remnant More than 30 days.
- Even though 48% of the total houses are Pucca in nature, a significant portion of them are found to be in bad condition. 52% of the houses are Semi pucca& Katcha in nature making them vulnerable to any kind of disaster.
- In respect to electricity connections, nearly 53% of the total houses do not have access to electricity.

b. Demography & Employment

- Nearly 36% of the total slum population is living under below poverty line (BPL) accounting 47444 households.
- About 79% of the slum population belongs to back ward social communities (OBC &SC).
- About 47% of the slum population belongs to minority communities constituting 43% of slum households.
- The average literacy among slum residents is only 76% where the female literacy rate is observed to be very less.
- It is found that 4% of the households are earning an average income of less than ₹1500 per month. Majority of the slum dwellers derive their livelihood as working labor, street vending, domestic helpers etc.,

4.3.2 Infrastructure

a. Water Supply

Table 4- 7: Water Supply Details

WATER SUPPLY							
	Notified Slums		Non Notified Slums		Total		% HH's of total House holds
	No of slums	No of HH's	No of slums	No of HH's	No of slums	No of HH's	
DURATION OF WATER SUPPLY							
Daily Less than 1 hr	14	4920	40	13002	54	17922	**12%**
Daily 1-2 hrs	72	22133	235	88292	307	110425	**73%**
Daily more than 2 hrs	7	9802	24	9885	31	19687	**13%**
Once a week	1	57	1	439	2	496	**0%**
Twice a week	0	0	0	0	0	0	**0%**
Not regular	6	1277	11	2291	17	3568	**2%**
No Supply	1	26	0	0	1	26	**0%**
Total	**101**	**38215**	**311**	**113909**	**412**	**152124**	
SOURCE OF DRINKING WATER							
Individual tap	96	15996	292	63846	388	79842	**52%**
Public tap	72	7486	252	30079	324	37565	**25%**
Tube wells/Bore well/hand pump	67	4166	212	18793	279	22959	**15%**
Open well	0	0	14	867	14	867	**1%**
Tank/pond	0	0	0	0	0	0	**0%**
River/canal/lake/spring	0	0	0	0	0	0	**0%**
Others	8	10509	9	324	17	10833	**7%**
Water tanker	1	58	0	0	1	58	**0%**
Total		**38215**		**113909**		**152124**	

About 52% of slum households have individual taps as primary source & 48 % are dependent on public water taps, tube wells, open wells, hand pump, water tanker and other sources. Hence 48 % households need to be addressed for provision of individual taps. Regardless of the connectivity to city wide water supply system, the major problem in Kanpur slums is poor quality of water caused due to waste disposal and contamination of leaked water pipes.

b. Sanitation

Table 4- 8: Sanitation Details

SANITATION							
	Notified Slums		Non Notified Slums		Total		% HH's of total Households
	No of slums	No of HH's	No of slums	No of HH's	No of slums	No of HH's	
CONNECTIVITY TO WIDE SEWERAGE SYSTEM							
Fully Connected	64	26575	58	20364	122	46939	31%
Partially Connected	35	11564	204	78435	239	89999	59%
Not Connected	2	76	49	15110	51	15186	10%
Total	**101**	**38215**	**311**	**113909**	**412**	**152124**	
CONNECTIVITY TO STORM WATER DRAINAGE							
Fully Connected	61	29337	94	34459	155	63796	42%
Partially Connected	37	7970	194	72991	231	80961	53%
Not Connected	3	908	23	6459	26	7367	5%
Total	**101**	**38215**	**311**	**113909**	**412**	**152124**	
SEWARAGE AND DRAINAGE FACILITIES							
Storm Water drainage	63	14141	287	32129	350	46270	30%
Under drainage/Sewer lines	43	10123	25	4236	68	14359	9%
Digester	0	0	0	0	0	0	0%
Not connected to Sewer or Digester	53	5784	291	76256	344	82040	54%
LATRINE FACILITIES							
Public/Community latrine-Septic tank/flush	35	3538	73	5870	108	9408	6%
Public/ Community latrine-Service latrine	15	2432	70	7592	85	10024	7%
Public/ Community latrine-Pit	1	10	17	931	18	941	1%
Shared latrine -Septic tank/flush/	11	538	46	3504	57	4042	3%
Shared latrine- Service latrine	9	83	39	2597	48	2680	2%
Shared latrine-Pit	0	0	25	1788	25	1788	1%
Own latrine -Septic tank/flush/	73	10595	125	19230	198	29825	20%
Own latrine- Service latrine	22	1388	124	12272	146	13660	9%
Own Latrine-Pit	10	463	95	7215	105	7678	5%
Open Defecation	53	19168	262	52910	315	72078	47%
Total		**38215**		**113909**		**152124**	

- Out of 412 slums, 31% (122 slums) are fully connected and 69% (290 slums) do not have access to city wide sewerage system. Hence there is a deficiency in overall sewerage and storm drainage system which needs to be upgraded to a complete as well as sustainable underground drainage system.

- With regards to storm water drainage, 42% (155 slums) are connected & 58% do not have connectivity to city wide Storm water system.

- 47% of households do not have proper individual toilet system. Hence resulting in open defecation.

c. Solid waste management

Table 4- 9: Solid Waste Management Details

SOLID WASTE MANAGEMENT				
	Notified Slums	Non Notified Slums	Total	% of Slums
ARRANGEMENT OF GARBAGE DISPOSAL				
Municipal Staff	47	133	180	**56%**
Municipal Contractor	39	73	112	**27%**
Residents themselves	5	22	27	**7%**
Others	1	4	5	**1%**
No Arrangements	9	79	88	**21%**
Total	**101**	**311**	**412**	
FREQUENCY OF GARBAGE DISPOSAL				
Daily	47	126	173	**42%**
Once in 2 days	29	20	49	**12%**
Once in a week	7	42	49	**12%**
Once in 15 days	8	31	39	**9%**
Not Collected	10	92	102	**25%**
Total	**101**	**311**	**412**	
FREQUENCY OF CLEARANCE OF OPEN DRAINS				
Daily	36	76	112	**27%**
Once in 2 days	36	32	68	**17%**
Once in a week	15	71	86	**21%**
Once in 15 days	7	38	45	**11%**
Not Collected	7	94	101	**25%**
Total	**101**	**311**	**412**	

- 34% of slums are not adequately covered with solid waste disposal.
- On other side, 21% of slums lack in arrangement for regular garbage collection. In areas where there is no frequent collection, the arrangement is taken care by the slum dwellers, constituting 7% (27 slums).
- 36% of the slums lack in frequent clearance of open drains, leading to further deterioration of environmental conditions and thereby contaminating the ground water quality.

d. Roads and street lighting

Table 4- 10: Roads and Street lights Details

ROAD & STREET LIGHTS				
	Notified Slums	**Non Notified Slums**	**Total**	**% of Slums**
APPROACH ROAD/LANE/CONSTRUCTED PATH TO THE SLUM				
Motorable Pucca	71	144	215	**52%**
Motorable Katcha	10	83	93	**23%**
Non Motorable Pucca	12	39	51	**12%**
Non Motorable Katcha	8	45	53	**13%**
Total	**101**	**311**	**412**	
INTERNAL ROAD				
Motorable Pucca	45	109	154	**37%**
Motorable Katcha	19	95	114	**28%**
Non Motorable Pucca	26	55	81	**20%**
Non Motorable Katcha	11	52	63	**15%**
Total	**101**	**311**	**412**	
DISTANCE FROM NEAREST MOTORABLE ROAD				
Less than 0.5 Km	77	225	302	**73%**
0.5-1 Km	6	59	65	**16%**
1-2 Km	1	14	15	**4%**
2-5Km	16	8	24	**6%**
>5 Km	1	5	6	**1%**
Total	**101**	**311**	**412**	
Availability of Street Light				
Yes	100	285	385	**93%**
No	1	26	27	**7%**
Total	**101**	**311**	**412**	

- 52% of slums have Motorable Pucca roads and 23% of slums have Motorable katcha road and remaining 25% for Non Motorable Pucca and katcha approach roads, which needs to be upgraded.

- 63% of slums are lack in proper internal roads with BT surface.
- In case of street lighting, 93% of slums have Street lights and 7% lack in street lighting facility.

e. Slum Deficiency Matrix & Development Options

With reference to process for generating deficiency matrix (refer Chapter 4.1.3) and based on the data analysis, 412 slums in Kanpur City have been categorized based infrastructure deficiency and vulnerability. Based on this, the existing condition of slums is assessed in the following way:

The following matrix presents the Infrastructure deficiency and vulnerability status of slums

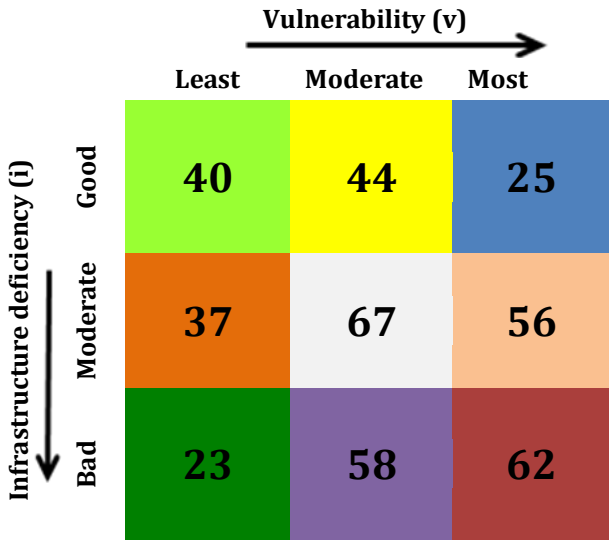


Table 4- 11: Slum Deficiency Matrix &Development Options

The No. of slums falling under different categories is as follows:

- Least vulnerable and Good Infrastructure – 40 slums
- Least vulnerable with moderate infrastructure – 37 slums
- Least vulnerable with bad infrastructure – 23 slums
- Moderate vulnerable with Good Infrastructure – 44 slums
- Moderate vulnerable with Moderate Infrastructure – 67 slums
- Moderate vulnerable with Bad Infrastructure – 58 slums
- Most vulnerable with Good Infrastructure – 25 slums
- Most vulnerable with Moderate Infrastructure – 56 slums
- Most vulnerable with Bad Infrastructure – 62 slums

For more details please refer Annexure 2D for slum wise evaluation index and choice of development.

CHAPTER 5 – REQUIREMENT & INVESTMENT

5.1 PHYSICAL REQUIREMENTS

5.1.1 Housing

As seen in earlier section, the variables of tenure status, tenability, density, housing type, housing condition and age of the structure have been considered to calculate the housing deficiency and similarly for infrastructure levels. To determine the mode of development for the identified slums based on their deficiencies, following criterions has been taken into account:

Relocation of slums

- Physical location of slums -along Nallah and hazardous
- Flood prone – water logging for a month or more
- Land ownership under Local bodies : earmarked land use zones in master plan
- Slums in close proximity to High transmission lines such as 220KV.

In-situ

- Semi Pucca and katcha houses greater than 75%

Up-gradation of slums

- Semi Pucca and katcha houses less than 75%

Table 5- 1: Housing Requirements

Mode of development	Hazardous	Non-Hazardous	
		Semi-Pucca + Katcha houses More than 75%	Semi-Pucca + Katcha houses Less than 75%
	Relocation	In – Situ	Up-Gradation
No. of Slums	7	118	287
No. of Households	2601	35020	114503
Hosing Deficit	2601	35020	55495
Housing Deficit	93116		

From the above *table 5-1*, it was identified that there is a housing deficient of **93116** households in 412 slums. From development point of view, 118 slums are found to be having Semi- Pucca and Katcha houses greater than 75%, hence considered for In-Situ development while 287 slums with semi Pucca and katcha houses less than 75% for slum up gradation and 7 slums are found to be relocation.

For slum-wise Housing requirement refer Annexure – 2A

5.1.2 Infrastructure

With reference to RAY and UDPFI guidelines, additional requirement for the existing slums have been calculated for each element where the following assumptions were made in terms of:

Water supply

- For sub line running length, 98% of the total internal roads
- Raising main length = Total Households x 3m (In -Situ)
- Raising main length = Proposed taps x 3m (Up gradation)
- Proposed number of taps = Total households - Existing taps
- For every 2500 population, an overhead tank of capacity 1 lakh litre

Sanitation

- Additional length of underground sewer lines and Storm water drainage line = 80% of the total road length
- Proposed toilets = Total households - Existing individual toilets (Up gradation)

Solid waste management

- For every 30 households = 1 garbage bin

Street lighting

- For every 45 mts of road length = 1 street light/light pole

Roads

- Approach road = 2% of the total road length with width of 4.5 m
- Internal roads = 98% of the total road length with width of 3 m

The following *table 5-2* and *5-3* presents the proposed requirements for each element of the physical and social infrastructure that needs to be implemented.

Table 5- 2 : Physical Infrastructure Requirements

S. No	Sector	Services - Unit	Requirement for existing slums
1	Water supply	Running length of sub line (Km)	623.03
		Raising Main (Km)	283.91
		Individual taps (No)	79498
		Overhead water tanks (No)	103
2	Sanitation	Length of Underground Drainage/Sewer Lines (Km)	518.60
		Length of storm water Drainage Lines (Km)	518.60
		Individual toilets (No)	71569
3	Solid Waste management	Garbage dumping Bins (No)	5088
4	Roads	Total length of Approach roads (Km)	6.53
		Total length of Internal roads (Km)	635.75
5	Street Lighting	Street lights (No)	12009

Table 5- 3: Physical Infrastructure Requirements

S.No	Sector	Unit	Requirement for existing slums
1	Education facilities	Anganwadi (No)	62
		Primary school (No)	7
		Secondary school (No)	4
2	Health Facilities	Primary Health Centre (No)	0
3	Social development	Community Room (No)	9
4	**Recreation & Open spaces** (Ha)		32.94

As per UDPFI Guidelines, for every 7500 population, a secondary school is required, for every 2500 population a pre-primary school and a primary school for 5000 persons has been recommended. Similarly for every 5000 population, a community hall is required hence 9 community halls have been proposed In addition to this open space of area 32.94 Ha (329446.64 sq.mts) has been proposed.

For slum-wise Physical Infrastructure requirement refer Annexure – 2B and for Social Infrastructure requirement refer – 2C

5.2 IMPLEMENTATION PLAN

A DPR would be recommended for each and every slum for implementation of slum development plan. The plan implementation and modalities would be discussed in detail through slum level community participation.

5.2.1 Prioritization of slums

Parameters for prioritization of slums for implementation of in-situ improvement / redevelopment for first phase of implementation for tenable slums are suggested below:

- **Insecure tenure of slum pockets:** Settlements without any security of tenure are most vulnerable and therefore should be given priority in selection for improvement.
- **Housing conditions and infrastructure deficiency**: Settlements with poor housing conditions and infrastructure deficiency should be given high priority for improvements.
- **Public land ownership**: Slum pockets on public sector owned land should be prioritized for improvement, as slums on private land would either require negotiations with owner or time consuming acquisition. Slum improvement/redevelopment should first be taken up where land is owned by Government agencies.
- **Dwelling unit Density**: - Priority should be given to small and medium size slums with low or moderate densities as it is difficult to improve very high density /large slums.

The total percentage is divided into 5 ranges and five (5) ranks have been given for prioritization. Then, addition of ranks for each indicator has done for all the slums. Mean from this total have been taken to prioritize slums year-wise for period of 5 years.

All the slums in the ULB are proposed to be covered under RAY in the phased manner indicated in the *Table 5-4*. As mentioned above, three different mode of development has been chosen to improve the existing slum conditions as well prevent future growth of the same. The following gives a brief of these modes and its characteristics:

Relocation

- Depending on the location and where there is no alternative
- Involves communities in identification of alternative sites
- Ensures that education, health, transport, basic services are provided before relocation

In situ

- Involves redevelopment of whole site to provide more living space and improved environmental conditions such as those in high density areas.
- Provision of transit accommodation and including of all residents, especially the extremely poor critical to success

Slum Up gradation

- Involves a mixture of provision or upgrading of service and infrastructure levels, incremental housing improvements or selective replacement of katcha houses

The following *table 5-4* gives a brief picture of the year wise phasing of development that needs to be taken up to improve the living conditions of the already existing slums for the next 5 years. The mode of development was taken up exclusively as a separate exercise thoroughly discussing with the stake holders in consultative workshop. The mode of development for the pilot DPR slums/first year slums have also been double checked and clarified by project officer, DUDA and other associated stake holders.

Table 5- 4: Slums to be covered under RAY in the Next 5 Years

Year of Development	Period	No of the Slums	Mode of Development
I	2011-14	0	Relocation
		15	In - Situ Development
		38	Up gradation
Total Slums		**53**	
II	2014-15	2	Relocation
		36	In - Situ Development
		54	Up gradation
Total Slums		**92**	
III	2015-16	4	Relocation
		52	In - Situ Development
		81	Up gradation
Total Slums		**137**	
IV	2016-17	1	Relocation
		8	In - Situ Development
		70	Up gradation
Total Slums		**79**	
V	2017-18	0	Relocation
		7	In - Situ Development
		44	Up gradation
Total Slums		**51**	
Total targeted Slums for 5 Years		**412**	

For slum-wise Mode of Development refer Annexure – 2D

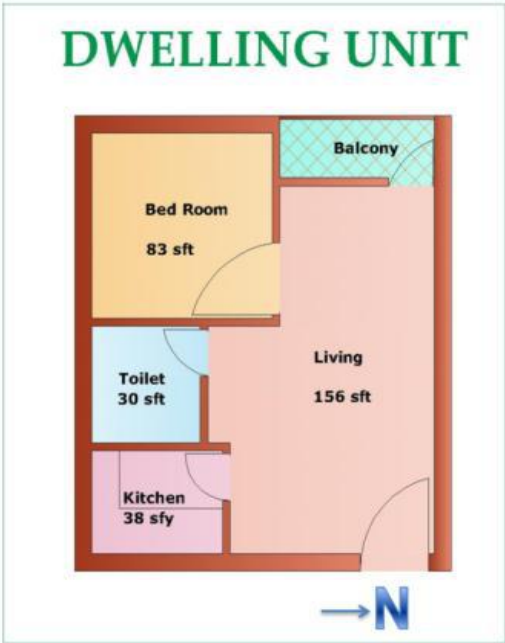
5.2.2 Proposed Model Layout

a. Housing

To make Kanpur a slum free city, there is a need to redevelop housing for **93116** households as estimated. Based on the physical location, ULB land ownership and surrounding land use, three slums have been chosen to replicate the future development and improved livelihood in terms of housing layout shown with all services. The layouts developed are in accordance with byelaws, JNNURM standards and facilitated with infrastructure services. According to Norms and Standards of Municipal Basic Services in India given by Jawaharlal Nehru National Urban Renewal Mission (JNNURM) for Housing, each flat has a plinth area of 330.60 square feet including common area.

Proposed Layout

All proposed housing units will be facilitated with a living room, single bedroom, kitchen and toilet and with provision of 8 houses on each floor to minimize the common area. The proposed structure would consist of ground +1, with 15% ground coverage and a proposed density of 100 dwelling units per acre. The following table and plan provides a brief specification of a single unit:



COMPONENT	DIMENSION
Living room	11.63 Sq.m
Bed room	7.68 Sq. m
Kitchen	3.4 Sq.m
Bath	1.85 Sq.m
W.C	0.9 Sq.m
Passage in front of Bath & W.C	0.68 Sq.m
Total area	**26.14 Sq. m**

b. Infrastructure

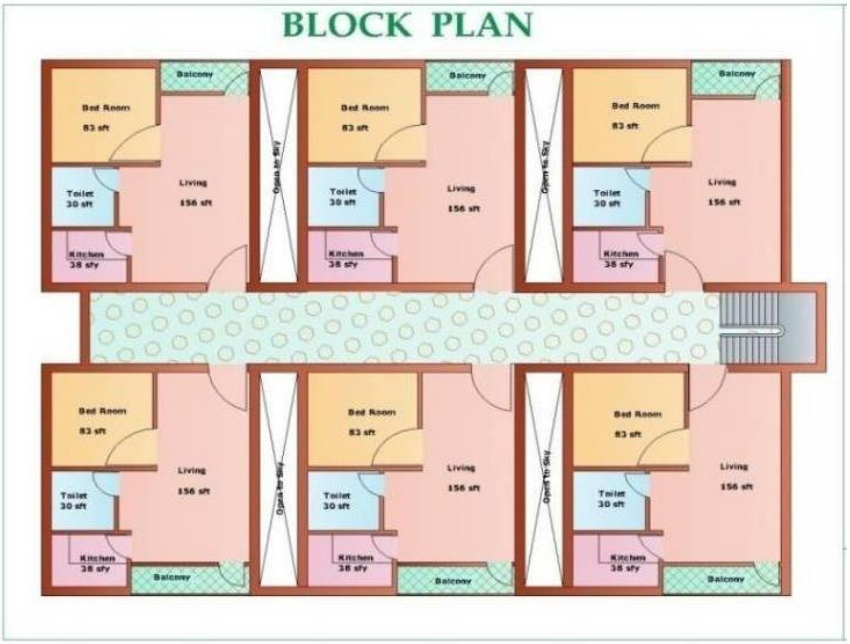
Provision for individual sump tank, over head LDPE tanks and pumps with all utilities will be made available to each of the building blocks for water supply arrangement.

Construction

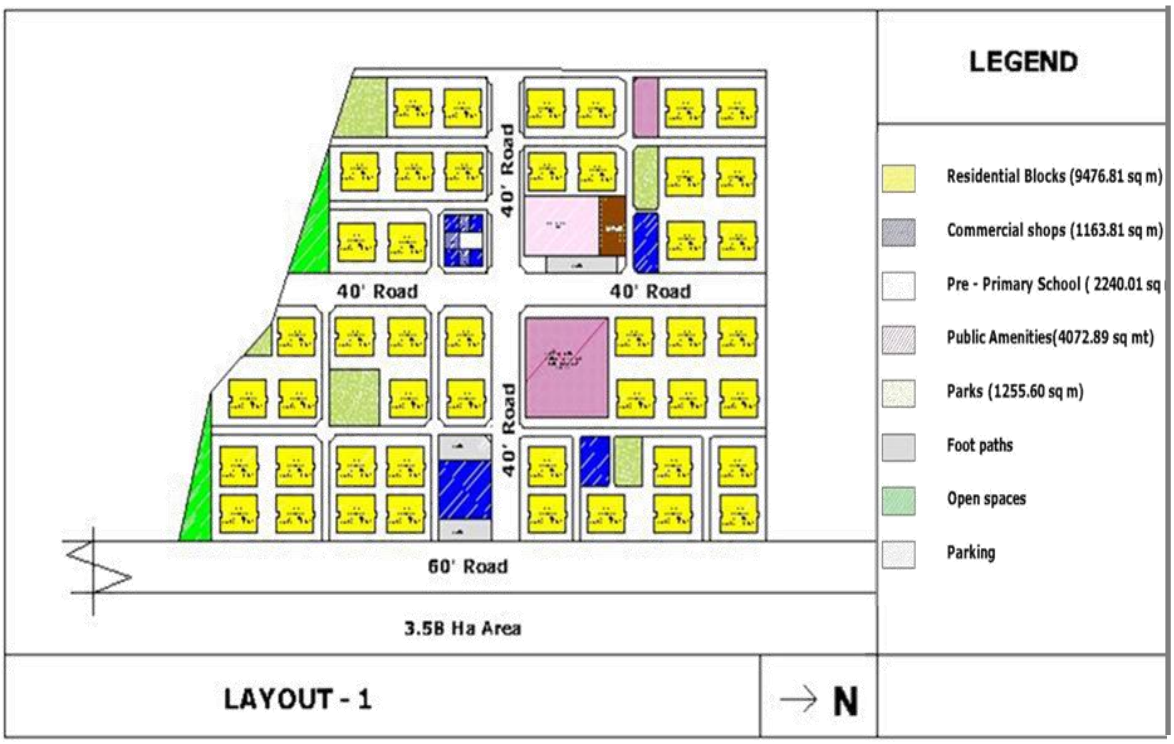
The type of construction will vary with several factors like soil conditions, local requirements and cost of the land. Generally in the smaller towns, which basically have rural culture, multistoried buildings are not acceptable but with circumstances, G+3 has been proposed for slums where ever required. The type of of housing would generally be small but independent houses/ combined houses with some free space around the houses. Given the occupation status of the slum households, some of them might have push carts or some of them may use this space for cottage industries or vegetable gardening.

Structure wise, a permanent housing unit with a plinth area of 330.60 Square feet will be constructed. The walls shall be built with solid concrete blocks and slabs shall be RCC. Ready mixed concrete shall be used in all RCC elements of the building for quality assurance and providing a smooth finish to the surface requiring less finishing.

The plan and specifications of single block are as follows:



DESCRIPTION	UNIT
Area of Block	2670.40 sq. ft.
No. Of Dwelling Units per block	6
Corridor width	7 ft
Stair case	45 Sq.ft
Area of layout	3.5 Ha
No of Blocks	46
No of Dwelling units	(46 X 18) = 828



Map 5- 1 : Model layout

5.3 MODALITIES / APPROACH

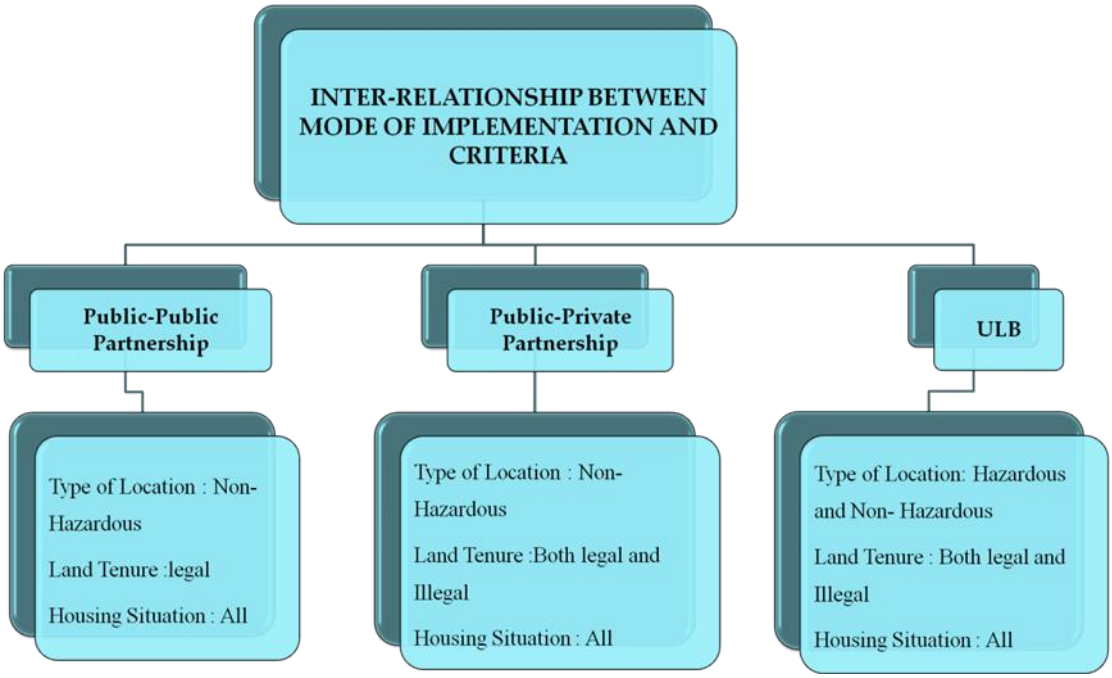


Chart 5- 1 : Modalities & Approach

A gap is sometimes called "the space between where we are and where we want to be." A gap analysis helps bridge that space by highlighting which requirements are being met and which

are not. The tool provides a foundation for measuring the investment of time, money and human resources that's required to achieve a particular outcome.

5.3.1 Slum Up-gradation/Redevelopment Options

With spatial analysis and situation assessment done as above, a participative process will need to be undertaken with slum communities with the assistance from NGOs/CBOs active in the area of slum housing/ development to identify the possible development options. The table 2-15 provides an indicative list of alternative development options and implementation modalities. The dialogue for choice of the model will also explore the possibilities of relocating slum households from high density/untenable slums to low-density tenable slums within the same zone. The following physical development options are possible

i. **Slum Improvement**: Extending infrastructure in the slums where residents have themselves constructed incremental housing.

ii. **Slum Up gradation**: Extending infrastructure in the slums along with facilitation of housing unit up gradation, to support incremental housing.

iii. **Slum Redevelopment**: In-situ redevelopment of the entire slum after demolition of the existing built structures

iv. **Slum Resettlement**: In case of untenable slums to be rehabilitated on alternative site.

5.3.2 Potential for Private Sector Participation

Private sector participation can be envisaged in redevelopment of slums where reasonable returns are expected for the investor. In order to assess the potential for PPP, ULB will need to map and tabulate land values in immediate environs of all slum pockets.

a. **Outputs of the Slum Redevelopment Plans**

- Development options and cost of each option for different categories of slums, which are to be proposed and vetted by community.
- Identification of options for development model proposed for each slum.
- Selection of development model for the slums to be followed by project development in consultation with the communities
- Identification of resettlement pockets
- Identification of slums to be densified
- Creation of vacant land,
- Identification of TDR loading corridors
- Integrated infrastructure planning including the identification of trunk infrastructure alignments and capacities(existing & proposed)

b. In relation to slum pockets

- Analysis of slums with low densities to assess slum pockets with possibility of densification to rehabilitate households from other slum pockets and creating vacant land pockets
- Exploring relocating possibility of untenable slums in nearby (within the zone) vacant pockets/ existing low density slum keeping their relation to employment centres

c. Outputs

- Development options for different categories of slums
- Implementation Structure.

5.4 INVESTMENT REQUIREMENTS

Accurate assessment of investment requirements and devising a suitable financing strategy are the key components for any sustainable slum rehabilitation program. It is of vital importance that implementing bodies recognize and measure the various costs of developing infrastructure and housing, including the costs for subsequent maintenance of the same. The success of the slum rehabilitation program would depend on matching the investment needs with the vibrancy/buoyancy of the various elements of the proposed finances. The following section describes the costs projected for various sectors from 2011-2018.

5.4.1 Housing

Based on the mode of development, the slums in view of housing condition, and physical location, has been categorized accordingly. The following *table 5-5* presents the required cost for each type of development for the slums.

Table 5- 5: Housing Investment Requirements

Mode of development	Hazardous	Non-Hazardous	
		Semi-Pucca + Katcha houses More than 75%	Semi-Pucca + Katcha houses Less than 75%
	Relocation	In – Situ	Up-Gradation
No. of HHs	2601	35020	114503
Deficit	2601	35020	55495
Housing Deficit	93116		
Costing (₹Lakhs)	8724.30	122290.99	146933.16
Total Cost (₹Lakhs)	277948.46		
Total Cost (₹Crores)	2779.48		

As illustrated in *Table 5-5*, 53% of the total estimated cost is allocated for up gradation mode of development, 44% for slum In-situ development and 3% for Relocation in Kanpur City. For

calculation purpose, costing per unit @ ₹3.05 lakh per house has been taken into view for the first year. Additionally for a duration of 5 years, an increase of 5% in the costs has been assumed with due consideration to changing market rate.

5.4.2 Infrastructure

This section covers the existing physical and social infrastructure and also the requirements for the same in **all slums** of the ULB including **perspective plan for 5 years.** Taking into account the additional requirement as mentioned in *tables 5-2* and *5-3*, the costing has been calculated for each sector shown in *table 5-6*.

Table 5- 6: Investment Requirement for Infrastructure

S. No	Sector	Sector - Unit	Proposed Cost for 2013-18 (in ₹ Lakhs)
Physical Infrastructure			
1	**Water Supply**	Running length of sub line (Km)	2593.02
		Raising Main (Km)	564.11
		Individual taps (No)	0.00
		Overhead water tanks (No)	1802.63
		Sub Total	**4959.76**
2	**Sanitation**	Length of Underground Sewer Line (Km)	8633.71
		Length of storm water Drainage Lines (Km)	8633.71
		Individual toilets (No)	9015.52
		Sub Total	**26282.93**
3	**Solid waste management**	Garbage dumping Bins (No)	470.83
		Sub Total	**470.83**
4	**Roads**	Length of Approach roads (Km)	345.61
		Length of Internal roads (Km)	11384.51
		Sub Total	**11730.12**
5	**Street Lighting**	Street lights (No)	1529.05
		Sub Total	**1529.05**
Total Physical Infrastructure			**44972.69**
Social Infrastructure			
6	**Education facilities**	Anganwadi (No)	210.79
		Primary school (No)	19.39
		High school (No)	30.91
		Sub Total	**261.08**
7	**Health Facilities**	Primary Health Centre (No)	0.00
		Sub Total	**0.00**
8	**Social development**	Community Room (No)	48.50
		Recreation park (sq.mts)	993.44
		Sub Total	**1041.94**
Total Social Infrastructure			**1303.03**
Grand Total Cost (Physical + Social) for Infrastructure			**46275.71**

The total cost estimates for infrastructure up gradation and provision is ₹**462.76** Crores, where physical infrastructure is estimated for ₹**449.73** Crores and social infrastructure is around ₹**13.03** Crores.

The following table presents sector wise cost estimated for five years (2013-18) by taking into consideration the cost calculated for the additional provisions/requirements, mentioned in earlier section:

Table 5- 7: Sector Wise Estimated Cost (in ₹ lakhs)

Sector	Estimated Cost for 2013-14	Estimated Cost for 2014-15	Estimated Cost for 2015-16	Estimated Cost for 2016-17	Estimated Cost for 2017-18	Total Project Cost for 5 years
Housing	52591.87	48299.26	109289.79	45356.12	22411.42	277948.46
Water Supply	525.91	872.74	1920.45	1148.75	491.90	4959.76
Sanitation	3481.10	4730.78	9940.92	6237.46	1892.68	26282.93
Solid waste management	78.46	67.21	152.25	111.24	61.67	470.83
Roads	729.80	2899.01	4731.38	2380.45	989.49	11730.12
Street Lighting	120.47	336.90	600.40	325.97	145.30	1529.05
Education	56.62	9.66	101.87	66.85	26.09	261.08
Health	0.00	0.00	0.00	0.00	0.00	0.00
Social development	107.23	201.20	393.82	212.83	126.86	1041.94
Others	3461.49	3445.01	7627.85	3350.38	1568.72	19453.45
Total	**61152.95**	**60861.77**	**134758.73**	**59190.05**	**27714.13**	**343677.62**

As shown in above table, the total cost projected for 5 years is ₹**3436.78** Crores, in which 81% is allocated for housing as top priority; 13% for physical infrastructure and social infrastructure. Under 'Others' head 6% of the housing, physical and social infrastructure is considered.

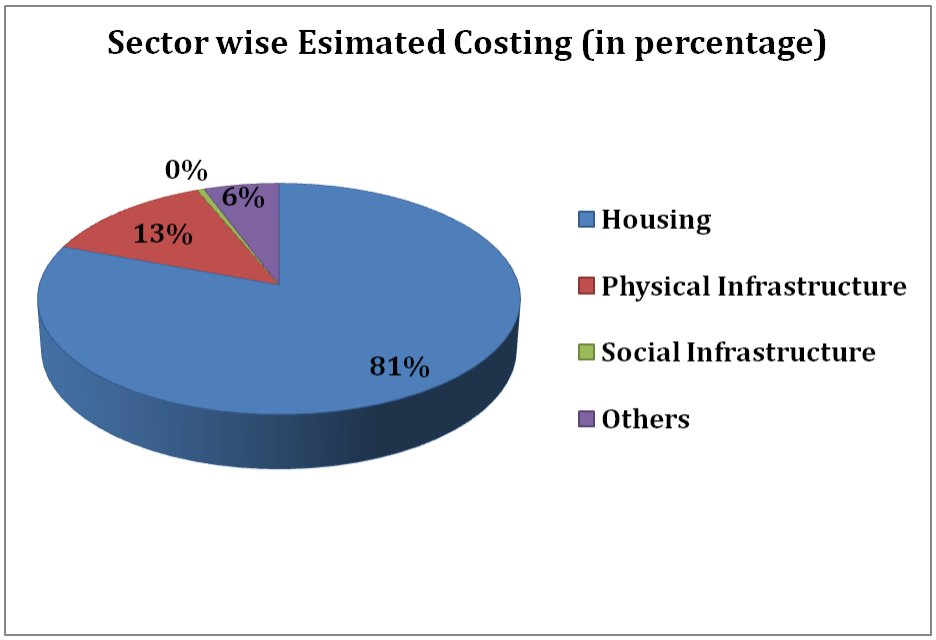


Figure 5- 1 Sector wise estimated Costing

Among physical infrastructure elements, due priority is given for sanitation for the next 5 years followed by sanitation and Roads. About 59% of the costing in physical infrastructure is allocated for sanitation. About 26% of the cost is allocated for Roads, 11% for Water Supply and 3% for Street lighting.

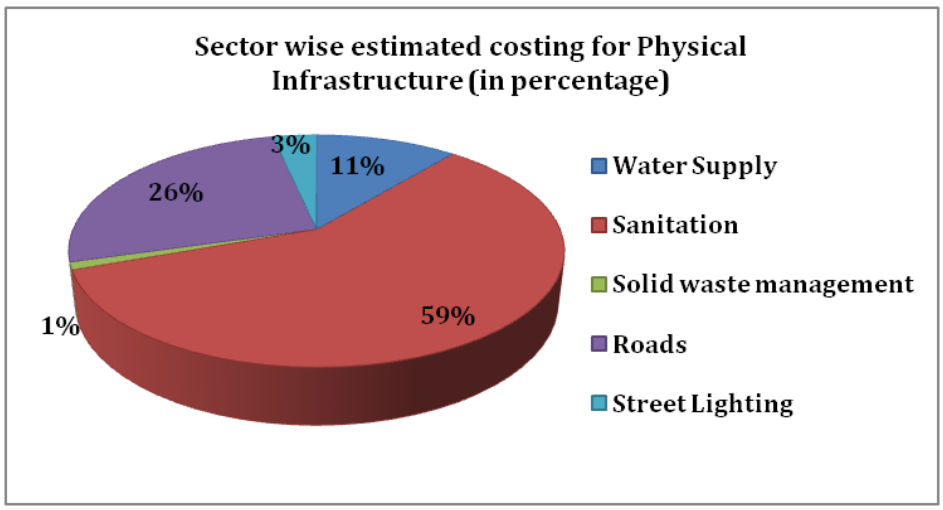


Figure 5- 2 Sector wise estimated Costing for Physical infrastructure

In the first year (2013-14) of development, 15 slums (2331 housing deficit) have been tentatively proposed for in-situ development with an estimated cost of **₹74.53** crores and other 38 slums (16269 housing deficit) are proposed for Up gradation, with an estimated cost of **₹451.39** crores.

5.4.3 Other Costs

In general, operation and maintenance costs form a sizeable share of a slum redevelopment budget. In case of Kanpur slums, other cost makes up 6% of the total estimated cost for each year. The following list of related costs that will be incurred during the implementation of a slum rehabilitation/redevelopment includes:

- O&M (2%)
- DPR (1%)
- Project Implementation (1%)
- Capacity Building (1%)
- Offsite cost (1%)

Table 5- 8: Other costing for 5 years

Year Wise	O & M	DPR	Project implement ation	Capacity building	Off site Costing	Annual estimated other costs (in ₹ Lakhs)
Ist Year	1153.83	576.91	576.91	576.91	576.91	**3461.47**
IInd Year	1148.34	574.17	574.17	574.17	574.17	**3445.02**
IIIrd Year	2542.62	1271.31	1271.31	1271.31	1271.31	**7627.86**
IVth Year	1116.79	558.40	558.40	558.40	558.40	**3350.39**
Vth Year	522.91	261.45	261.45	261.45	261.45	**1568.71**
Total	**6484.48**	**3242.24**	**3242.24**	**3242.24**	**3242.24**	**19453.45**

Depending upon the mode of development, the operation and maintenance costs will vary from slum to slum. Seen in *table 5-8*, the others cost catering to the housing and infrastructure investment requirements as set out earlier includes 5 (five) sectors where 194.53 crores has been estimated for a period of 5 years. Of the total estimated costs under others head, 33% is allocated for Operation and maintenance (O&M).The remaining initial costs such as Project implementation, and DPR, capacity building and offsite costing expenses alone constitute 67%.

5.5 CAPACITY BUILDING

Through the medium of District Urban Development Authority (DUDA), Urban Local Body (ULB) and community organizations, SJSRY Schemes will be integrated with Ministry of Housing and Urban Poverty Alleviation (MoHUPA), GoI.

5.5.1 Slum dwellers

Slum dwellers also act as **stakeholders** in planning for slums as they understand the slums, strategies implemented in those slums and future requirements. Hence they should be trained in developing their respective slums, otherwise the aims of SJSRY staff not be fulfilled.

5.5.2 Intermediaries

CO's, CBO's and community volunteers are the **Intermediary stakeholders** to train the trainer's. Capacity building for them is convincing & managing the slum association to accept proposals. Training and adequate guidance to the CBO's and the community volunteers can be organized by the concerned cells/agencies/lead NGO to build common understanding on their role and purpose of data collection for the SFCP. The capacity building activities can also be undertaken by the National Network Resource Centres (NNRCs), empanelled by the Mo/HUPA.

It is expected that the SFCPoA is prepared with active participation of community during the planning process. To enable the same suitable structures (cooperatives/ societies) might need to be formed, where necessary. The communities would need to demonstrate willingness to adopt the implementation option, plan for livelihood/ economic activities within the slum. Communities are also expected to assist in generating the beneficiary contribution.

5.5.3 Government stakeholders

Being the main sponsor of the RAY scheme, ULB would prepare the SFCPoA as a first step to clearly articulate the action plan for making the city "slum free". During the preparation of Slum Free City Plan of Action, ULB would continuously consult with the community in the planning process. During the process, ULB would categorize and prioritize for rehabilitation/ redevelopment, and would provide/ facilitate provision of infrastructure. ULB, in consultation with the community, will also allot dwelling units and enable provision of the legal titles to the beneficiaries.

CHAPTER 6 - SLUM PREVENTION STRATEGY

6.1 INTRODUCTION OF SLUM PREVENTION STRATEGY

Strategy for prevention of slums in future will include prevention of encroachments and illegal structures and further supply of affordable housing on the other. The plan of action should encompass proposed action to be undertaken by the city to commensurate the lands and promote the construction of affordable housing in consonance with the housing demand. City-wide policies for slum prevention should include:

- Inventory of Vacant and underutilized lands through GIS mapping
- Assessment of Housing demand for current slum population and future using Master Plan estimated values
- Formulation of demand side as well as supply housing strategies through exploration for various development options such as PPP model, direct subsidies and incentives

Land Reservation/Land pooling

- Reservation of 20-25% of developed land for EWS/LIG housing
- Land assembly mechanisms and policy obstacles to land supply
- Ensure continuous supply of developed land for EWS/LIG housing

Allocation of land to various organizations

- In new cases where land is allotted to various organizations or institutions by the government for development of work space, or industries, or institutions etc., there shall be reservation of land for economically weaker sections and low income groups of persons in respect of all municipalities, municipal corporations and urban development authorities.
- In respect of land where it has already been allotted, the unutilized portion may be reserved for economically weaker sections

New Housing

- Availability of Public vacant lands
- Incentives provided to private sector
- Availability of housing finance to be ensured for low income groups through public agencies and retail finance.

Rental Housing

The provision of rental housing is a major task which needs to be worked out. The provision of affordable housing by the respective state/city government or through provision of incentives to private land owners, Public Private Partnership etc would definitely help as a preventative step for future formation of slums. The government of Maharashtra recognizes the importance of rental housing in providing affordable housing to the EWS/ LIG category and this is explicitly

reflected in its housing policy. In pursuance of the Maharashtra State Housing Policy 2007, Mumbai Metropolitan Regional Development Authority (MMRDA) formulated a scheme to build small rental tenements targeted towards the LIG category to be made available at a reasonable rent. Hence, it could be a recommended practice to implement in Uttar Pradesh state to promote Rental Housing. The rental housing provisions could be assets when State Government/ULB plans to build them in dynamic strategic location where ideally people would migrate in search of work and move further for search of same.

The provision of rental housing will make sure the poor people will not be forced to stay in a particular slum if they would have a facility of rental homes at several parts of the city. 50 % of the projected housing demand will be considered for provision of rental housing.

- Decide eligibility of tenants
- Standards for rental housing
- Decide for rental housing policy for rents, modalities for allotment, evictions
- Mechanisms for maintenance and management
- Incentives for rental housing

6.2 HOUSING STOCK ASSESSMENT IN SLUMS

6.2.1 Population Projections

Population projection is important and basic requirement for the provision of basic services to the people. It is also required to plan for service provision and revenue realization from the users in a city, which is the direct function of the population and population growth. As Kanpur is the Industrial capital of Uttar Pradesh state and a major commercial, trade educational centre an increase of 1% per year is expected.

Table 6- 1 : Projected population for 5 years

Population projection		
Year	**Increase in population**	**Projected population**
2013-2014	7140	721167
2014-2015	7212	728379
2015-2016	7294	735663
2016-2017	7357	743019
2017-2018	7430	750450
Total	**36423**	---------

At the end of five years, a total population of 750450 is estimated for 412 slums in **Kanpur.**

6.2.2 Household requirement for slums

Table 6- 2 : Housing requirements for 5 years

Households Projection	
Year	**Households**
2013-14	1428
2014-15	1442
2015-16	1457
2016-17	1471
2017-18	1486
Total	**7284**

The future housing supply has been computed in accordance with the existing growth rate of respective slums. The identified housing shortage also termed as housing demand would help avoid formation of new slums, provide basic facilities to the incoming poor migrants. Similar to estimated population in slums, the additional requirement of households in the slums has been projected for a 5 year period assuming a growth rate of 1%. Assuming that the growth rate would be constant for every year, an increase of **7284** households has been projected for five years (seen in *table 6-2*).

6.2.3 Infrastructure requirements

Using the model layout, the cost for proposed infrastructure elements has been calculated. The proposed dwelling units are 7284 which indicate 9 model layouts are required for future demand. Hence the infrastructure requirement is indicated in the *table 6-3*:

Table 6- 3 : Infrastructure requirement for 5 years

S. No	Sector	Sector - Unit	Requirement for 2013-18
Physical Infrastructure			
1	Water Supply	Running length of sub line (Km)	110.61
		Raising Main (Km)	18.00
		Individual taps (No)	7284
		Overhead water tanks (No)	15
2	Sanitation	Length of Underground Sewer Line (Km)	92.16
		Length of storm water Drainage Lines (Km)	92.16
		Individual toilets (No)	0
3	Solid waste management	Garbage dumping Bins (No)	243
4	Roads	Length of Approach roads (Km)	2.25
		Length of internal roads (Km)	112.86
5	Street Lighting	Street lights (No)	2558
Social Infrastructure			
6	Education facilities	Anganwadi (No)	15
		Primary school (No)	7
		Secondary school (No)	5
7	Health Facilities	Primary Health Centre (No)	2
8	Social development	Community Room (No)	7
		Recreation park (Ha)	3.22

6.3 IMPLEMENTATION PLAN

6.3.1 Options for Generating Stock

Public Private Partnership

The rationale behind creating public-private partnerships is that the private sector typically has access to upfront capital and a track record of delivering products efficiently, while the public sector/state/central Govt. controls the regulating environment and, occasionally, crucial resources needed to implement a project, such as land. The following illustrates three different slums chosen for PPP model wherein the housing type with infrastructure has been proposed.

ARRA SLUM –MODEL LAYOUT

Arra is one among 249 slums located in the core area of Kanpur City. It has a total population of 2450 with 400 households and an area of 42215.40 Sq.m. Under the ownership of Kanpur City Corporation, Arra slum is located in the Core area and surrounded by Industrial use. Of the 400 houses, 23% are Semi Pucca and 75% are katcha in nature. Due to lack of well built housing structures and inadequate physical infrastructure, there is a need to improve the living conditions in Arra slum.

Proposals

Based on the above information, in situ mode of development has been recommended to make the areas habitable and for provision of tenure rights to the slum dwellers. As part of in situ development, 408 dwelling units have been proposed with each unit of area 331.50 Sq.ft and comprises of living room, single bedroom, a kitchen and toilet .The following gives a description of a single housing unit:

Description	Dimensions (Feet)
Bed room	9.0 x9.0
Living	8.6 x 17.0
Toilet	6.0x5.0
Kitchen	7.0x5.6
Balcony	10.0x2.6
Total area of Dwelling unit	331.5 (Sq.ft)

Specifications for Doors & Windows in a single Dwelling unit:

Description	Dimensions (Feet)
Doors D 1	3.11 x 6.5
D2	3.30x 6.5
Windows	3.3x4.11
ventilators	1.12x4.11

Housing plan:

Per block 12 dwelling units (DU) has been proposed with a total area of 2636.10 sq. ft. A total of 34 blocks has been proposed preferred floors to be G+1 for each. The specifications and plan of a single block has been shown below:

- Area of Block – 2636.10 sq ft.
- No. of Dwelling Units – 6 per floor , total 12 units
- Corridor – 6’ wide
- Stair case

Block construction specifications:

Sl.No	Description	Units
1	Earth Work Excavation for RCC footing	3.28' depth
2	CC 1:4:8 for footing	4'' thick
3	VRCC footing M20	5'X5'X12''thick
4	VRCC columns M20	9'' x12'' size
5	VRCC Plinth beam M20	9''x 12'' size
6	PCC BED for plinth beam	4'' depth
7	Earth Filling to foundation & Basement	1'5'' Depth
8	40x15x22.5 cms CC solid Blocks for Walls	9'3'' height
9	40x10x22.5 cms CC solid Blocks for partition walls	9'3'' & 6'10'' height
10	VRCC M20 for lintel	9'' Width
11	VRCC roof Slab M20	4'' Thick
12	Ceiling plastering	CM 1:4 of 2'8''thick
13	Wall plastering inside	CM1:4 of 2'8'' thick
14	Wall plastering outside	CM1:3 of 4'' thick
15	MS hallow Door with shutters for main Door & Bedroom	2'11'' X 6'5'' & 2'5''x 6'5''
16	NCL Windows & Ventilators	2'11'' x 6'5'' ,1'11'x 6'5'' etc
17	Acrylic Emulsion Paint	Inside walls & Ceiling
18	Acrylic Emulsion Paint	outside
19	Flooring	Inside houses
20	Internal Electrification	Provided
21	Internal Sanitation	Provided
22	Internal Water supply	Provided
23	Painting to Doors & Windows	Provided
24	Rooftop Plastering	Provided
25	Staircase	Provided

Source: 25th Revised Edition Estimation and Costing in Civil Engineering. (By B.N. DUTTA)

Land Use

The following table presents the proposed land use Arra Slum:

Description	Area (Sq.ft)
Slum Area	10.43 Acres
Proposed Slum Area	181728.00
Residential	204208.00
Park and recreation	87116.00
Roads	51644.00

To encourage future development in the slum, a Public-Private partnership has been chosen for mixed land use where 94940.00 Sq.ft of land is allocated for Residential space and 12% for roads has been reserved. Under this model, potential business opportunities can be created as well as better access to improved infrastructure, thus fostering Arra slum development in the long run.

Physical Infrastructure

- **Roads** - B.T. are proposed as per the requirement
- **Surface / storm water drains** -RCC U-Shape drains are proposed on both sides of the road to drain out the Surface water as per the site requirement.
- **Sewerage** -Provision for sewerage distribution system has been made and the same will be connected to main Sewer line nearby wherever sewer facility is available.
- **Water Supply** -water supply distribution network linked to city wide has been proposed as per the requirement and individual sumps and overhead tanks have also been proposed.
- **Electricity -**Lump sum provision for layout electrification has been made along with provision for individual house connection. Obtaining the electricity Service Connection will be the responsibility of the dweller and observing the necessary formalities by metering. The houses will be provided with internal and external wiring for getting service connection from the electricity authorities concerned.

The following page presents the model layout for Arra slum:

Map 6- 1 : proposed layout of Arra slum

NANAK NAGAR NAVASTHA KACHHI BASTHI SLUM -MODEL LAYOUT

Nanak Nagar Navastha Kachhi Basthi is located in the fringe area of Kanpur City. It has a total population of 2900 with 600 households and an area of 28828.17 Sq.m. Under the ownership of Kanpur City Corporation, Nanak Nagar Navastha Kachhi Basthi slum is surrounded by residential use. Of the 600 houses, 50% is Semi Pucca and 37% are katcha in nature. Due to lack of well built housing structures and inadequate physical infrastructure, there is a need to improve the living conditions in Nanak Nagar Navastha Kachhi Basthi slum.

Proposals

Based on the above information, in situ mode of development has been recommended to make the areas habitable and for provision of tenure rights to the slum dwellers. As part of in situ development, 612 dwelling units have been proposed with each unit of area 331.50 Sq.ft and comprises of living room, single bedroom, a kitchen and toilet .The following gives a description of a single housing unit:

Description	Dimensions (Feet)
Bed room	9.0 x9.0
Living	8.6 x 17.0
Toilet	6.0x5.0
Kitchen	7.0x5.6
Balcony	10.0x2.6
Total area of Dwelling unit	331.5 (Sq.ft)

Specifications for Doors & Windows in a single Dwelling unit:

Description	Dimensions (Feet)
Doors D 1	3.11 x 6.5
D2	3.30x 6.5
Windows	3.3x4.11
ventilators	1.12x4.11

Housing plan:

Per block 18 dwelling units (DU) has been proposed with a total area of 2636.10 sq. ft. A total of 34 blocks has been proposed preferred floors to be G+2 for each. The specifications and plan of a single block has been shown below:

- Area of Block – 2636.10 sq ft.
- No. of Dwelling Units – 6 per floor , total 18 units
- Corridor – 6’ wide
- Stair case

Block construction specifications:

Sl.No	Description	Units
1	Earth Work Excavation for RCC footing	3.28' depth
2	CC 1:4:8 for footing	4'' thick
3	VRCC footing M20	5'X5'X12''thick
4	VRCC columns M20	9'' x12'' size
5	VRCC Plinth beam M20	9''x 12'' size
6	PCC BED for plinth beam	4'' depth
7	Earth Filling to foundation & Basement	1'5'' Depth
8	40x15x22.5 cms CC solid Blocks for Walls	9'3'' height
9	40x10x22.5 cms CC solid Blocks for partition walls	9'3'' & 6'10'' height
10	VRCC M20 for lintel	9'' Width
11	VRCC roof Slab M20	4'' Thick
12	Ceiling plastering	CM 1:4 of 2'8''thick
13	Wall plastering inside	CM1:4 of 2'8'' thick
14	Wall plastering outside	CM1:3 of 4'' thick
15	MS hallow Door with shutters for main Door & Bedroom	2'11'' X 6'5'' & 2'5''x 6'5''
16	NCL Windows & Ventilators	2'11'' x 6'5'' ,1'11'x 6'5'' etc
17	Acrylic Emulsion Paint	Inside walls & Ceiling
18	Acrylic Emulsion Paint	outside
19	Flooring	Inside houses
20	Internal Electrification	Provided
21	Internal Sanitation	Provided
22	Internal Water supply	Provided
23	Painting to Doors & Windows	Provided
24	Rooftop Plastering	Provided
25	Staircase	Provided

Source: 25th Revised Edition Estimation and Costing in Civil Engineering. (By B.N. DUTTA)

Land Use

The following table presents the proposed land use Nanak Nagar Navastha Kachhi Basthi Slum:

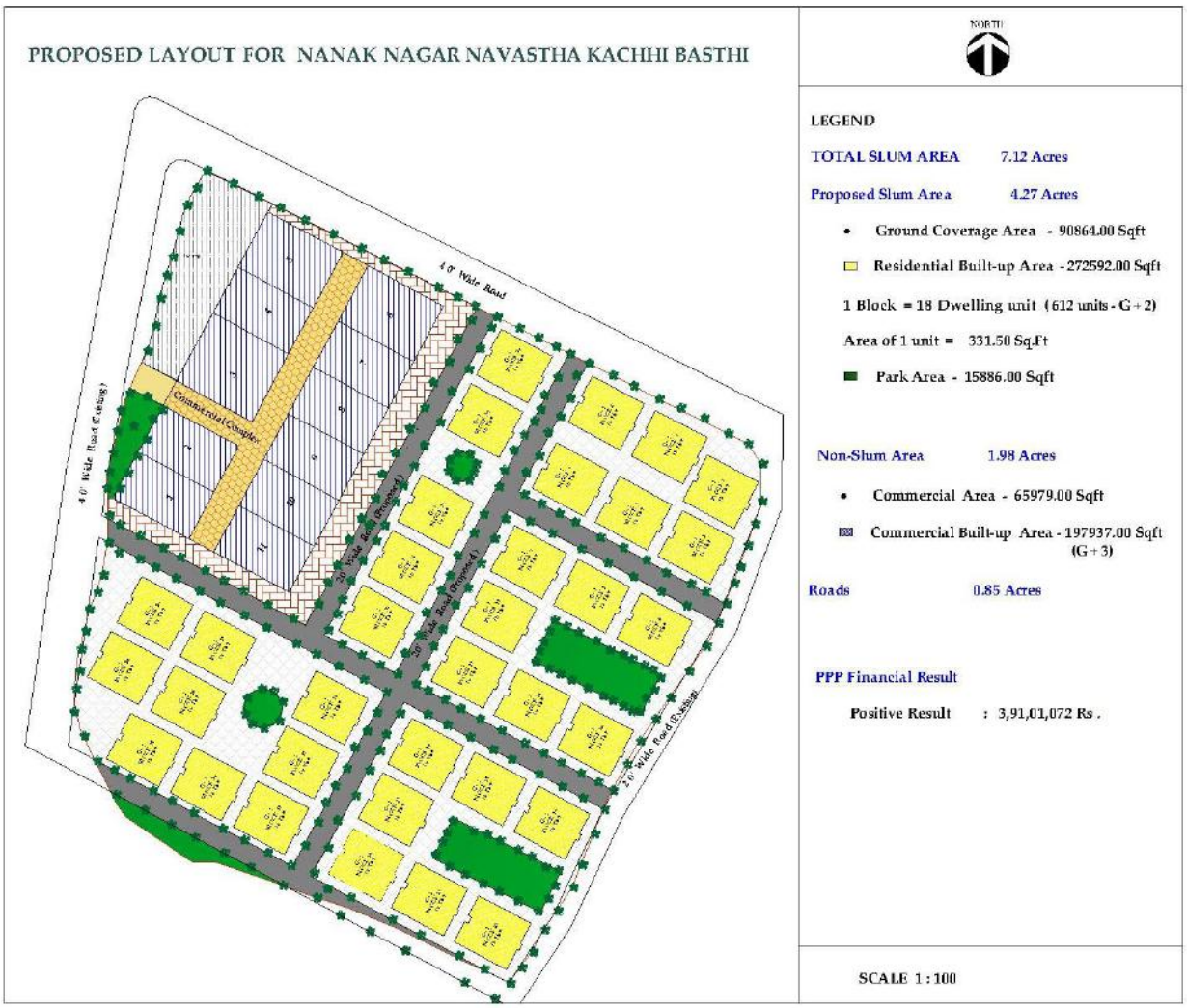
Description	Area (Sq.ft)
Slum Area	7.12 Acres
Proposed Slum Area	272592.00
Commercial Area	197937.00
Parking	10657.00
Park and recreation	15886.00
Roads	37342.00

To encourage future development in the slum, a Public-Private partnership has been chosen for mixed land use where 65979.00 Sq.ft of land allocated for Commercial space and 15% for roads has been reserved .Under this model, potential business opportunities can be created as well as better access to improved infrastructure, thus fostering Nanak Nagar Navastha Kachhi Basthi slum development in the long run.

Physical Infrastructure

- **Roads** - B.T. are proposed as per the requirement
- **Surface / storm water drains** -RCC U-Shape drains are proposed on both sides of the road to drain out the Surface water as per the site requirement.
- **Sewerage** -Provision for sewerage distribution system has been made and the same will be connected to main Sewer line nearby wherever sewer facility is available.
- **Water Supply** -water supply distribution network linked to city wide has been proposed as per the requirement and individual sumps and overhead tanks have also been proposed.
- **Electricity -**Lump sum provision for layout electrification has been made along with provision for individual house connection. Obtaining the electricity Service Connection will be the responsibility of the dweller and observing the necessary formalities by metering. The houses will be provided with internal and external wiring for getting service connection from the electricity authorities concerned.

The following page presents the model layout for Nanak Nagar Navastha Kachhi Basthi slum:



Map 6- 2 : proposed layout of Nanak Nagar Navastha Kachhi Basti

Rental Housing

Rental housing shall be developed in partnership with the private sector and ULBs may determine rents to be paid by the households. Families may also contribute to a maintenance fund. Both amounts shall be based on an assessment of affordability by the ULB. Developers, where applicable, may be permitted to collect rentals to recover the cost of construction in BOT arrangements, as appropriate. Maintenance charges may be collected by the cooperative/Resident Welfare Association/land trust, as the case may be. The following are the list of options available under rental housing:

- Rental housing by employers/industries/SEZ - Employees housing for high paid employees
- Rental housing by employers/industries/SEZ - Employees housing for low paid employees
- Dormitory housing
- Subsidy housing / FAR incentive
- Others- Group housing

6.3.2 Targets & Timelines

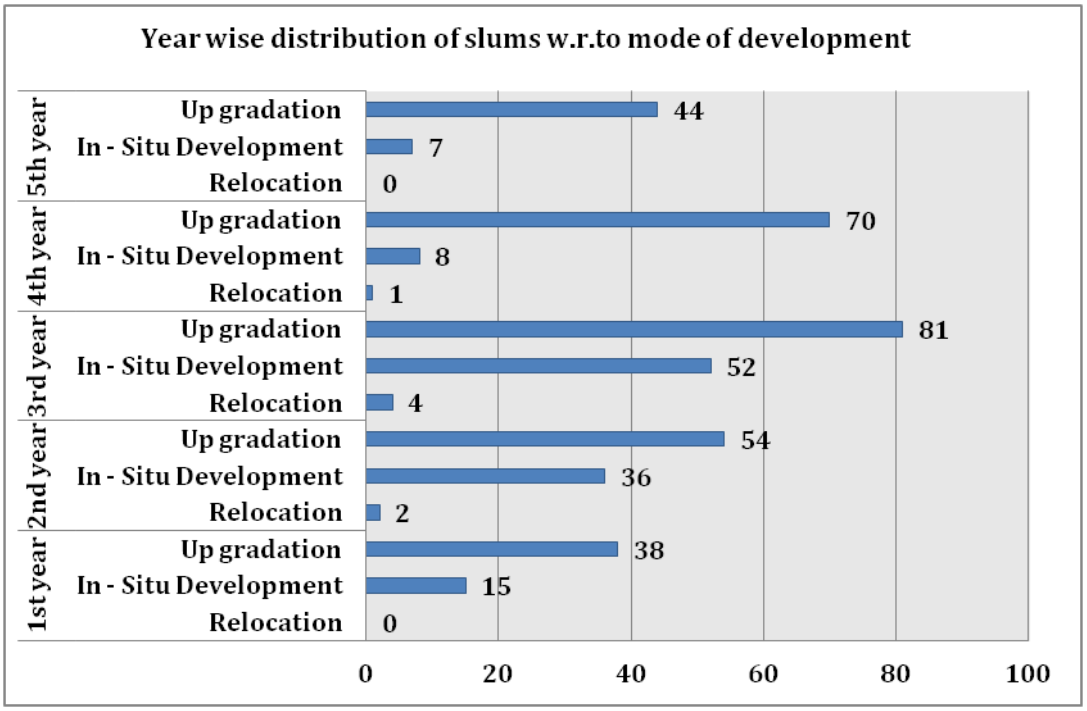


Figure 6- 1: Mode of Development

As seen in the *Figure 6-1*, for 412 slums in Kanpur city, 7 slums are proposed under Relocation, 118 for in-situ mode of development and 287 for up-gradation based on assessment of the living conditions in those areas. Given the magnitude of problems faced, the slums have been prioritized and to be implemented year wise respectively. Once the redevelopment process is initiated, it is imperative that slum wise targets should be set and adhered in order for the rehabilitation process to be accomplished within the set time frame. For this to happen, it is necessary that there needs to be high level coordinating mechanism between wide group of

stakeholders such as Govt. officials, professionals from different disciplines, NGOs/CBOs, and slum dwellers.

6.4 INVESTMENT REQUIREMENTS

6.4.1 Housing

The following table and chart shows the finance costing for projected households for 5 years (2013-2018).

Table 6- 4 : Costing for projected Households

Costing for projected households		
Year	**Households**	**Estimated cost (in ₹ Lakhs)**
2013-14	1428	4348.26
2014-15	1442	4610.43
2015-16	1457	4891.31
2016-17	1471	5185.23
2017-18	1486	5500.01
Total	**7284**	**24535.24**

As seen in the above chart, an increase of 7284 households is expected, for which the estimated costs for 5 years is **₹24535.24** lakhs with an increase of **1%** (construction inflation cost) per year.

6.4.2 Infrastructure

For the purpose of calculations, the following factors were taken into consideration:

- For sanitation, the total city wide trunk is considered to be as 1% of the total project cost
- For roads, costs was calculated for non Motorable Pucca and katcha roads at the new formation costs, while for Motorable katcha the costs was calculated at re-carpeting and repair rates.
- For in situ/ relocation mode of development – the costs are almost equal to construction a new layout.
- For up-gradation – equivalent to renovation costs.

The following table shows the estimated costs for physical infrastructure components for a period of 5 years (2013-2018).

Table 6- 5 : Costing for projected Infrastructure

S. No	Sector	Sector - Unit	Cost for 2013-18 (in ₹ lakhs)
PHYSICAL INFRASTRUCTURE			
1	Water Supply	Running length of sub line (Km)	418.11
		Raising Main (Km)	32.89
		Individual taps (No)	0.00
		Overhead water tanks (No)	236.25
		Sub Total	**687.24**
2	Sanitation	Length of Underground Sewer Line (Km)	1393.46
		Length of storm water Drainage Lines (Km)	1393.46
		Individual toilets (No)	0.00
		Sub Total	**2786.92**
3	Solid waste management	Garbage dumping Bins (No)	20.41
		Sub Total	**20.41**
4	Roads	Length of main roads (Km)	25.99
		Length of internal roads (Km)	948.02
		Sub Total	**974.01**
5	Street Lighting	Street lights (No)	295.45
		Sub Total	**295.45**
Total Physical Infrastructure			**4764.03**
SOCIAL INFRASTRUCTURE			
6	Education facilities	Anganwadi (No)	45.99
		Primary school (No)	17.93
		High school (No)	36.75
		Sub Total	**100.67**
7	Health Facilities	Primary Health Centre (No)	7.56
		Sub Total	**7.56**
8	Social development	Community Room (No)	34.91
		Recreation park (sq.mts)	87.96
		Sub Total	**122.87**
Total Social Infrastructure			**231.11**
Grand Total Cost (Physical + Social) for Infrastructure			**4995.14**

6.4.3 Other costs

The following table shows the estimated costs for additional components and other costs for Kanpur slums for a period of 5 years (2013-2018):

Table 6- 6 : Proposed 'Other' Costs

Proposed Other cost (in ₹ lakhs)						
Year	**O & M**	**DPR**	**Project implementation**	**Capacity building**	**Offsite costing**	**Total Other costs**
2013-14	118.12	59.06	59.06	59.06	59.06	**354.36**
2014-15	118.12	59.06	59.06	59.06	59.06	**354.36**
2015-16	118.12	59.06	59.06	59.06	59.06	**354.36**
2016-17	118.12	59.06	59.06	59.06	59.06	**354.36**
2017-18	118.12	59.06	59.06	59.06	59.06	**354.36**
Total	**590.61**	**295.30**	**295.30**	**295.30**	**295.30**	**1771.81**

A total of **1771.81** lakhs has been estimated for the additional costs that are going to be incurred during and after the implementation of the project.

Housing + Infrastructure +Other Costs = 24535.24+4995.14 + 1771.81

= ₹31302.19 Lakhs

The total of ₹**313.02** Crores has been estimated tentatively for the proposed development.

6.5 SLUM PREVENTION REFORMS

For any city, preventing the formation of newer slums is quite critical and pretty much the same as dealing with the existing slums. A key component in preventing future slums is the availability of developed lands at affordable prices, set aside for meeting the needs of the urban poor. To prevent further growth of slums and improve the social status of existing ones along with reconstruction, the states need to make the following provisions in terms of amendments to certain legislations, reservation of lands, as well as formulate newer laws such as:

a. Assignment of property rights

The property rights shall not be assigned to the slum dwellers in the slum Areas notified and located on any of the following categories:

Objectionable government lands, such as tank beds, burial grounds, solid waste land fill cities etc., central government, defense , industrial units, disputed lands, protected monuments, public sector lands and other lands which are specified by government for a specific purpose and usage.

The legal title should be entitled either on the woman or jointly with the main male householder, provided it should be made on the house or the land and it must be alienable as per the transfer of title to state after a certain period.

b. Formation of Slum Redevelopment Authorities

A slum redevelopment authority is to be created at state level with induction of members from various departments. The role of the authority would be to provide guidance in identification of slums, formulate policies and programmes for redevelopment and rehabilitation of slums, special zoning regulations and to administer the funds released by govt. of India, state govt. and other agencies. On similar lines of the slum redevelopment authority at state level, a district level authority can be formed to function as well as monitor the slum rehabilitation for each district.

c. Land Acquisition

Just in case where no suitable government or ULB lands are available, suitable private patta lands are identified for rehabilitation of slum areas.For implementation of Infrastructure Projects in Public Sector viz providing housing stock, State highways, canal, power and so on the process of land acquisition would be initiated by following the Rules & Regulations as provided in the Land Acquisition Act 1894, from the land owners. But the compensation of land would be fixed by mutual consent as per the provisions of the Uttar Pradesh Land Acquisition (Determination of Compensation and Declaration of Award by Agreement) Rules, 1997. Those land owners whose land is acquired for these projects would be given all the benefits of the Rehabilitation & Resettlement Policy 2010 (as amended) of the Government.

d. Land pooling

In land pooling/town planning scheme, the owner or developer undertaking the development shall reserve and earmark the land in the proportions of 5% for the economically weaker sections (EWS) and 5% of land for low income group persons for housing purpose. In case of vertical development, 20% of built up space shall be earmarked for EWS and low income groups.

Once implemented, in the long term, availability of affordable land /housing will discourage squatting by poor on public lands and create slum free cities. It will also sustainably reduce urban poverty levels by providing legal access to better services and economic opportunities.

e. Land use conversion and development permission process w.r.to time

It is generally abide by the master plan provision of that particular area; however the land use change and development permission process has to be dealt with in a time frame 30 days by the development or controlling Authority, as per the norms of Town and country planning Department, Uttar Pradesh.

f. Building & Layout Plans of Regulated Areas

The powers to formulate building bye laws lie in the municipal legislations/ acts of local government or development authority within its jurisdiction or the municipal acts of State Government. Formulation of building byelaws is generally facilitated by the provisions made

under common municipal law/ act for the State, which also covers those urban areas that do not have separate building bye laws.

'NO OBJECTION' certificate for building plans having total covered area more than 250 Sq.mt and Lay-out plans of more than 1.0 hectare area are also to be dealt with in a time frame of **30 days** by the development or controlling Authority, as per the norms of Town and country planning Department, Uttar Pradesh. However the Model building and layout plans prepared in this report are as per the standards of National building code.

g. Transferable Development Rights (TDR) /Incentive Zoning

TDR is aimed at providing to a land owner /builder additional FAR in another property/part of the city in exchange for presently occupied land so that the land could be consolidated. This method has been extensively used in other parts of India.

h. Microfinance for shelter up-gradation

To make cities slum free, it is necessary to build partnerships with Self Help Groups and Micro Finance Institutions both formal and informal to help poor access money to purchase land /houses. Often Financial Institutions prefer to provide loans through NGOs, who works as intermediaries, to disburse loan to beneficiaries. State/ city administration can facilitate this process by standing guarantee or by framing appropriate regulations so that benefits of these transactions reach the target group.

i. Other legislations

- Under the 7- Point Charter of JNNURM in order to make serviced land available for the poor for the future and to prevent slums – there is a necessity to reserve 10%--25% of the land for every new public/private housing projects.
- Amendment to enactments to enable revision of population density norms, FAR, land use, etc. and to allow private sector participation wherever reasonably possible.
- Extension of basic network services including health and education to slum settlements
- Provision of skills and training and nonwage, self employment assistance, the self-employment component in the SJSRY
- Microfinance for shelter up-gradation
- Changes in Master Plans that allows for slum renewal and redevelopment, legislation and building byelaws

j. ULB's role

The implementing agency/ULB would need to continue fiscal reforms that have already been initiated under the JNNURM and other relevant schemes. Approach to financing of the ULB contribution would need to be a combination of initiatives that ring-fence and maximize internal accruals, and developing a framework for sustainable community participation/ unlocking other sources of revenues.

6.6 CAPACITY BUILDING

With the launch of RAY, capacity building efforts received a significant boost in terms of scale as well as scope. It is usually focused on provision of technical assistance, training and knowledge support to enable implementation of programmes and related components. Through incremental approach and comprehensive framework, capacity building requires in selecting the appropriate mode of training and should imply the flow of ideas, systems and processes, knowledge management through the creation of networks of sector managers for sharing emerging trends, ideas and best practices towards implementing slum free cities.

At State level

The state needs to prepare state specific capacity building strategy should map existing arrangements/requirements/gap analysis/identify specific measures for strengthening existing facilities and expertise. This framework should incentivize knowledge and skill development and provide an environment for the use of skills acquired.

At ULB level

Given the legal implications, it is essential for ULB staff to improve levels of performance in order to reduce evasion. Hence to gain expected outcomes, it is necessary for orienting ULB personnel to the role expected out of them in the context of rising expectations from the citizens in terms of service delivery, greater transparency and accountability etc.

At NGO's level,

Implementation of projects and reforms involves increased stakeholders participation among the general public, NGOs and the private sector. There is a need to create forums where different stakeholders can articulate their demands for better service delivery and governance levels.

Slum dwellers

Slum dwellers also act as stakeholders in planning for slums as they understand the slums, strategies implemented in those slums and future requirements. Hence they should be trained in developing their respective slums, otherwise the aims of SJSRY staff not be fulfilled.

An amount up to 5% of the total annual allocation of RAY scheme will be set aside for capacity building activities, of which 1% would be utilized by the Centre, 4% by the States/UTs. In addition, up to 5% of the total scheme allocation will be earmarked for preparatory activities regarding development of Slum-Free City Plans including pilot projects, preparation of DPRs, community mobilization, IEC, planning and administrative expenses for both the Centre and the States/UTs and creation of institutional space and capacities.

CHAPTER 7 - FINANCING STRATEGY

7.1 TOUCHSTONE PRINCIPLES

7.1.1 Institutional Framework

A number of agencies are responsible for various activities pertaining to housing for urban poor. Although it is primarily the responsibility of the ULB, other departments/ agencies such as the Urban Development Department, Town Planning Department Slum Clearance (or Redevelopment) Board, Housing Board and NGOs, all have a role to play in provision of housing and infrastructure services to the urban poor.

The following institutional methodology has been adopted for the state.

The institutional responsibility for slum improvement vests with the State Urban Development Agency (SUDA), the apex policy making and monitoring agency for urban areas in the state. It executes various government schemes for urban renewal like – Balmiki Ambedkar Awas Yojana, Integrated Urban Slum Sewerage Plan, National Slum Development Program, and Golden Jubilee Urban Employment Scheme etc. SUDA executes all its programs using beneficiaries for prioritization of needs and execution of schemes.

In case of Rajiv Awas Yojana, SUDA is the nodal agency at state level to implement surveys for the scheme. As per the directions of Government of India, Slum Survey started in Uttar Pradesh from the year 2009. Initially the survey was taken up under USHA programme, which had similar survey format of RAY. Various meetings were conducted by calling different para-statal agencies to discuss the required methodology for conducting surveys and initiate the steps for survey. Several discussions were held at length and depth about the conduction of surveys and to finalize a methodology.

SUDA as State level authority and DUDA as city level authority have been the Nodal agencies to monitor the quantity and quality of surveys performed by individual cities. DUDA is headed by Project Officer (PO) who is in charge for one city, a nodal officer for a ULB and number of supervisors for quality and quantity check upon the enumerators who have completed the surveys. Member of Community Development Societies (CDS), Self Help Groups constituted under SJSRY and other schemes have been involved in conducting surveys and a minimum qualification of SSC was taken as eligibility for selecting Enumerators to collect information and to fill up the survey forms. The various stakeholders involved in the survey process comprised of CDS, Nehru Yuva Kendra societies, NGO's working in the local areas. In addition, key stakeholders involved along with SUDA in the process of implementing RAY scheme comprises of City Commissioners, Regional Center for Urban and Environmental Studies (RCUES) Hyderabad, UP Remote Sensing Center, NHG's, NHC's, CDS and reputed NGO's working in the local areas.

7.1.2 Assessment of Implementation Options

The assessment for implementing a mode of development for any slum in Kanpur city would be based on the prevailing land value. The implementation could be both public and private depending on the public and stakeholders consensus with due approval of the city with respect to its land ownership and project implementation.

7.2 INVESTMENT CREATION FOR CREATION OF NEW AFFORDABLE HOUSING INCLUDING RENTAL HOUSING

Earmarking land for the poor alone may not be sufficient guarantee that land /housing will be available to the poor. There will be need to help the poor access this land. This will require creating awareness among the poor on where the lands have been allocated, include their development in the Ward Plans, tap potential of local /small private builders for housing the poor, engage with local NGOs to increase the voice of poor in local area planning and access to city resources.

The ULB's has to strictly execute the mandatory reform of "Earmarking at least 20-25 percent of developed land in all housing projects (developed by public and private agencies) for Economically Weaker Section (EWS) and Lower Income Group (LIG) category with a system of cross subsidization"

Under the Community Participation Law, ULBs are expected to set up Ward and Area Sabhas with adequate representation of poor people. These may be used as opportunities to proactively disclose the upcoming housing projects for poor within the city. This would also fit in with the provisions of the Public Disclosure Law.

Apart from large Public Private Partnerships, cities must also forge partnerships with Self Help Groups and Micro Finance Institutions both formal and informal to help poor access money to purchase land /houses. Often Financial Institutions prefer to provide loans through NGOs, who works as intermediaries, to disburse loan to beneficiaries. State/ city administration can facilitate this process by standing guarantee or by framing appropriate regulations so that benefits of these transactions reach the target group.

7.3 FINANCING PLAN

7.3.1 Summary of Investments

Table 7- 1 : Summary Investments

Sector	Estimated costing for existing slums	Estimated costing for prevention of new slums	Total Project Cost
Housing	277948.46	24535.24	302483.70
Water Supply	4959.76	687.24	5647.00
Sanitation	26282.93	2786.92	29069.85
Solid waste management	470.83	20.41	491.24
Roads	11730.12	974.01	12704.13
Street Lighting	1529.05	295.45	1824.50
Education	261.08	100.67	361.75
Health	0.00	7.56	7.56
Social development	1041.94	122.87	1164.81
Others	19453.45	1771.81	21225.26
Total	343677.62	31302.19	374979.81

To make slum free city Kanpur the overall cost is estimated tentatively at a value of **₹374979.81 Lakhs (₹3749.80 Crores)**

For slum wise line estimates please refer annexure 2E

7.3.2 Financing Structure

Implementing slum free city requires the concerned authorities to develop a legal framework based policy for internal earmarking of funds, ensuring the preparation of separate budget for urban poor, creating BSUP Fund etc.

Chart 7- 1 : Financing Structure

a. Central Share

Speaking of the Government of India share in RAY project funding, 50% of the cost for provision of basic civic and social infrastructure and housing, including rental housing,- and transit housing for in-situ redevelopment -in slums would be borne by the Centre, including O&M of assets created under RAY scheme. The remaining half required the states or ULBs to use PPP models innovatively to generate resources for slum housing through land use concessions, etc to the private industry partners, and use of the central share as viability gap funding. States which demonstrate an innovative use of PPP models resulting in utilization of less than the specified central share of 50% in any project shall be incentivized by allowing them to use this saving in other projects in the city.

An amount of nearly 5% of the total annual allocation would be set aside for capacity building activities, of which 1% would be utilized by the Centre, 4% by the States/UTs. In addition, upto 5% of the total scheme allocation will be earmarked for, preparatory activities regarding development of Slum-Free City Plans including pilot projects, preparation of DPRs, Community mobilization, IEC, planning and administrative expenses.

b. Beneficiary Contribution

In order to ensure the communities interest and active participation, financial contribution by the beneficiaries is considered to be critical. As specified, the share of beneficiary contribution in the housing sector is anticipated to be a minimum of 12% of total cost and 10% in case of different social groups and other weaker sections. Options such as aggregation of loans to a community of beneficiaries wherever feasible, will be encouraged. Adequate security and credit enabling structures for such participation including mortgage insurance would need to be structured and made available to the beneficiaries. The option of linking to the Mortgage Risk Guarantee Fund (MRGF) to which the State has to contribute could be explored.

There are various initiatives that can be undertaken by the States/ ULBs to facilitate beneficiary contribution and to make finances available during the 5 year span of the RAY scheme. These include the following:

- Facilitating long-term concessional interest rate/differential interest rates to the beneficiaries
- Access to microfinance and alternate funding options
- Rajiv Awas Shelter Fund, to be used:
- To keep the slum/urban poor beneficiary from turning defaulter due to unemployment, death or other genuine distress and thereby risk forfeiture of dwelling unit and foreclosure on loan
- To share the lender's costs of servicing the loan.

7.3.3 Strategy for Sustenance

Local bodies need to explore options for raising finance through other avenues such as PPP, shared mortgage and pooled financing mechanisms. For sustenance, it is essential for a ULB to prioritize in a way that the maximum benefit is derived for the investments proposed to be

made for implementing development works and service delivery for slums. This can be achieved only through beneficiary participation and consensus.

7.3.4 ULB Finances

To undertake financing for slum rehabilitation, ULBs need to adopt a different approach or a well designed strategy for financing by:

- Internal earmarking of funds for RAY in the municipal budgets, allocation of available surplus for slum rehabilitation under RAY
- Earmarking of property taxes, trade license fee, hawker-license fees, SWM cess etc.,
- Share of other devolutions, whenever applicable
- Proceeds from PPP projects
- Unlocking alternate revenues, using land based instruments such as FSI, TDR, land banking etc.

The reforms/other initiatives that ULBs would need to evaluate include the following:

- Setting up of a revolving fund for continued O & M of the infrastructure & housing
- Evaluate and converge with other existing schemes, as applicable.

7.3.5 Earmarking for Slum Rehabilitation & Prevention Strategy

For all new housing projects developed by public or private agencies, it would be mandatory to construct houses for LIG/EWS groups. Suitable amendment may be made to State/local enactments for this purpose. The percentage of housing units to be earmarked for LIG/EWS in apartments or group housing projects in large and small cities will be between 20-25% as prescribed under RAY. In case of vertical development, 20% of built up space shall be earmarked for economically weaker sections and low income groups of persons.

7.3.6 Community Participation

Community participation is critical for a successful slum rehabilitation and development. ULBs need to ensure that appropriate community processes and organization of community structures for planning and implementation of housing and upgrading projects. In addition, the local bodies need to facilitate Area and Ward Committees with representation of slum communities, in accordance with the Community Participation Law for participatory area and ward level planning and monitoring.

7.4 MONITORING & REVIEW

RAY would be monitored at three levels: City, State and Government of India. The following agencies and departments would be monitoring at their respective levels:

- Ministry of Housing and Urban Poverty Alleviation will periodically monitor the scheme.
- State Nodal Agency would send Quarterly Progress Report (on-line) to the Ministry of Housing and Urban Poverty Alleviation. Upon completion of a project, the State Nodal Agency, through the State Government, would submit completion report to the Central Government.

- Central Sanctioning-cum-Monitoring Committee will meet as often as required to sanction and review/monitor the progress of projects sanctioned under the Mission.
- Monitoring of quality of projects executed by the implementing agencies in the States/Cities will be facilitated through independent quality control/ assurance/ third party teams at various levels that may be outsourced to specialized/technical agencies.
- Monitoring of projects by States/Urban Local Bodies by conducting Social Audit in conformity with guidelines to be prescribed, right from the stage of project preparation.
- The processes of implementation will be monitored by undertaking concurrent evaluation through reputed independent institutions to ensure that corrections to distortions, oversights or shortcomings can be made in time.

7.5 REFORMS

Major Policy Initiatives & Reforms initiated in order to unlock land, acquiring land and liberalizing building approval plans for EWS/LIG housing etc, credit options for urban poor under SUHP-1995 are as follows.

- Model Building Bye-laws-2000
- Land Use Conversion Policy-2001
- Model Zoning Regulations – 2002
- EWS & LIG Housing Policy-2011
- Land Acquisition Bill-2011

A draft slum free act has been already in place in state of Uttar Pradesh. ULB/State Govt. agencies need to suggest the sequencing of steps and timelines to be adopted during implementation of slum redevelopment programmes for a period of five years.

LIST OF ANNEXURES

Stakeholder Workshop / Meeting – News Paper Clippings

कार्यशाला का दीप जलाकर शुभारंभ करतीं मंडलायुक्त शालिनी प्रसाद साथ में महापौर जगतवीर सिंह द्रोण, डीएम समीर वर्मा व प्रभारी नगर आयुक्त उमाकांत त्रिपाठी।

कार्यशाला में राजीव आवास योजना के संचालन की रूपरेखा तैयार

कानपुर, स्टाफ रिपोर्टर : राजीव आवास योजना के तहत स्लम मुक्त शहर बनाने की कवायद तेज हो गई है। सोमवार को परेड स्थित होटल में आयोजित कार्यशाला में योजना के संचालन की रूपरेखा तैयार की गई।

महापौर जगतवीर सिंह द्रोण ने कहा कि स्लम एरिया में रहने वाले लोगों को मकान मिलने व मूलभूत सुविधाओं से उनका जीवन स्तर सुधरेगा। इसके क्रियान्वयन के लिए व्यापक कार्ययोजना बनाने का निर्णय लिया गया। मंडलायुक्त शालिनी प्रसाद ने बताया कि फिलहाल पोखरपुर और हरबंश मोहाल बस्ती का चयन किया गया है। वहां जल्द ही विकास और निर्माण कार्य शुरू होगा। सरकारी भूमि पर स्थापित बस्तियों में विकास और निर्माण तो हो जाएगा, लेकिन प्राइवेट भूमि पर बसी बस्तियों का विकास संभव नहीं है। यहां बसे लोगों को मकान देने के लिए भूमि बैंक बनाया जाए। ताकि वहां मकान बनाकर आवंटित किए जा सकें। इस अवसर पर डूडा के परियोजना निदेशक ओके सिंह, कार्यवाहक नगर आयुक्त उमाकांत त्रिपाठी, डूडा की परियोजना अधिकारी निधि वाजपेयी आदि रहे।

वैकल्पिक आवास बनाया जाए

जिलाधिकारी समीर वर्मा ने कहा कि नालों और सड़क किनारे रहने वालों को उजाड़ने से पहले उनके लिए वैकल्पिक आवास बनाया जाए। जब मकान बन जाएं तो उन्हें वहां आवास आवंटित कर दिए जाएं।

जल्द सिटी प्लान

रीजन सेंटर फॉर अर्बन एंड इनवारमेंटल स्टडीज हैदराबाद के अपर निदेशक बसंत कुमार ने कहा कि योजना के संचालन के लिए जल्द सिटी प्लान तैयार कर लिया जाएगा।

सभी बस्तियां शामिल हों

सपा पार्षद दल के नेता सुहेल अहमद, कांग्रेस पार्षद दल के नेता कमल शुक्ला बेबी ने कहा कि शहर में एक हजार से अधिक मलिन बस्तियां हैं लेकिन योजना में सिर्फ 434 शामिल हैं। सभी बस्तियों को इसमें शामिल किया जाए। इस पर मंडलायुक्त ने कहा कि पार्षद सुझाव दें ताकि समग्र रूप से योजना बन सके।

मलिन बस्तियों में बनेंगे 30 हजार आवास

अमर उजाला ब्यूरो

राजीव आवास योजना का एक्शन प्लान तैयार

कानपुर। नगर की 434 मलिन बस्तियों में चरणबद्ध तरीके से 30 हजार आवास बनाए जाएंगे। पहले चरण में करीब 30 मलिन बस्तियां ली जाएंगी। सोमवार को हुई कार्यशाला में इसका एक्शन प्लान तैयार किया गया। साथ ही नगर निगम से सुझाव मांगे गए। एक्शन प्लान को अंतिम रूप देकर 15 जून तक केंद्र सरकार को भेजा जाना है।

लैंडमार्क होटल में डूडा की ओर से राजीव आवास योजना पर हुई कार्यशाला में मुख्य अतिथि कमिश्नर शालिनी प्रसाद ने सुझाव दिया कि राजीव आवास तीन मंजिला बनाने के बजाय कोशिश करें कि एक या दो मंजिला बनाए जाएं, ताकि वहां रहने वालों को बार - बार जीने चढ़ने - उतरने में दिक्कत न हो। डीएम ने इस योजना को छोटी मलिन बस्तियों से शुरू करने का सुझाव दिया। कार्यक्रम की अध्यक्षता कर रहे महापौर कैप्टन जगतवीर सिंह द्रोण ने इस योजना की सराहना की। इससे पहले रीजनल सेंटर फार अरबन डवलपमेंट स्टडीज (रिक्यूस), हैदराबाद के एडिशनल डायरेक्टर बसंत राव और प्रोजेक्ट कोआर्डिनेटर रामाराव ने बताया कि शहर की सभी मलिन बस्तियों का चयन कर 434 मलिन बस्तियों का चयन किया गया है। इस योजना के तहत शहर की 434 मलिन बस्तियों में 30 हजार आवास बनना है। योजना की अनुमानित लागत चार अरब रुपये है।

मलिन बस्तियों के सुध

कार्यक्रम में दीप जलाते महापौर, मंडलायुक्त, जिलाधिकारी।

कानपुर। नगर निगम ने अब मलिन बस्तियों की तरफ रुख कर दिया है। बेहद जल्द हालात सुधरेंगे। इन्हें हर मूलभूत सुविधा से लैस किया जाएगा। इसके लिए सोमवार को हुई बैठक में सुझाव भी मांगे गये।

लैंडमार्क होटल में आयोजित 'स्लम फ्री सिटी प्लान ऑफ एक्शन' विषय पर कार्यशाला का शुभारंभ महापौर जगत वीर सिंह द्रोण, मंडलायुक्त शालिनी प्रसाद व डीएम समीर वर्मा ने दीप प्रज्जवलन कर किया। राजीव आवास योजना संबंधी प्रोजेक्ट पर पूरी योजना दर्शाई गई। इस मौके पर रीजनल सेंटर फॉर अर्बन एंड इनवायरमेंटल स्टडीज हैदराबाद से आए प्रतिनिधियों ने योजना की बारीकियां बताईं। इन प्रतिनिधियों के जरिए मलिन बस्तियों का सर्वे करने के साथ ही सीवेज, पेयजल, रोजगार आदि की व्यवस्थाएं मुहैया कराने, अवासीय योजनओं के निर्माण व क्रियान्वयन पर प्रकाश डाला गया। केडीए सचिव राकेश कुमार, अपर नगर आयुक्त उमाकांत त्रिपाठी, डूडा के परियोजना निदेशक ओके सिंह, परियोजनाधिकारी डूडा निधि वाजपेयी आदि मौजूद रहें।

स्लम फ्री सिटी प्लान ऑफ एक्शन विषयक पर एक दिवसीय कार्यशाला का आयोजन

नगर के स्लम एरिया को चिन्हित कर उन्हें विकसित व मूलभूत सुविधाओं से मुक्त बनाया जायेगा

दीप जलाकर कार्यशाला का शुभारंभ करती मंडलायुक्त पायनियर

पायनियर समाचार सेवा। कानपुर•

कानपुर नगर के स्लम एरिया को चिन्हित कर राजीव आवास योजना के द्वारा विकसित व मूलभूत सुविधाओं से युक्त बनाया जायेगा। कानपुर स्थित एक होटल में आयोजित स्लम फ्री सिटी प्लान ऑफ एक्शन ''विषयक एक दिवसीय कार्यशाला के अन्तर्गत राजीव आवास योजना सम्बन्धी प्रोजेक्ट का प्रस्तुतिकरण कर उक्त योजना के विषय में शहर के सभी पार्षद्रों को विस्तृत रूप से बताया गया। कार्यशाला का शुभारम्भ महापौर कैप्टन जगतवीर सिंह द्रोण, मण्डलायुक्त शालिनी प्रसाद व जिलाधिकारी समीर वर्मा ने दीप प्रज्जवलित कर किया। कार्यक्रम में रीजनल सेण्टर फॉर अर्बन एण्ड इनवायरमेंटल स्ट्डीज हैंदराबाद के प्रतिनिधियों ने राजीव आवास योजना के अन्तर्गत मलिन बस्तियों को सर्वे कर वहां सीवेज, पेयजल, रोजगार आदि की व्यवस्था से युक्त आवासीय योजनाओं के निर्माण व क्रियान्वयन पर प्रकाश डाला गया और नगर निगम व स्थानीय जन-प्रतिनिधियों से सुझाव भी आमंत्रित किये गये। कार्यशाला में सचिव के0डी0ए0 राकेश कुमार, अपर नगर आयुक्त उमाकान्त त्रिपाठी, परियोजना निदेशक डूडा ओ0के0 सिंह, परियोजना अधिकारी डूडा श्रीमती निधि बाजपेयी समेत अन्य अधिकारी व पार्षद उपस्थित थे।

LIST OF ANNEXURES

SLUM PROFILE

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