1.0 JNNURM & The CDP

1.1 The Mission[1]

1.1.1 Introduction

Urban centres have a vital role in India's socio-economic transformation and change. Host to about 30% of the country's population, these contribute 50-55% of the gross domestic product (GDP). At the same time, most cities and towns area severely stressed in terms of infrastructure and service availability, and their growth and development is constrained by indifferent implementation of the 74th Constitution Amendment Act (CAA), 1992, and continuation of statutes, systems and procedures that impede the operation of land and housing markets. As this in incompatible with the country's socio-economic objectives, the Government of India (GoI) launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM/ Mission) in 1995 fiscal year. The Mission aims at encouraging cities to initiate steps to bring about improvement in the existing service levels in a financially sustainable manner.

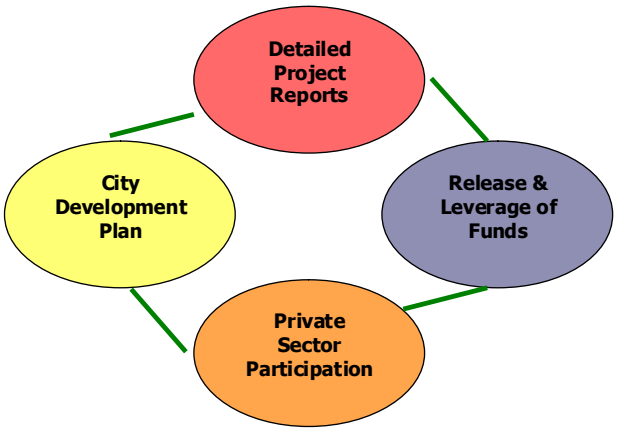
The JNNURM consists of two sub-missions –

- The Urban Infrastructure and Governance; and
- The Basic Services to the Urban Poor.

The Mission believes that in order to make cities work efficiently and equitably, it is essential to –

- Create incentives and support urban reforms at state and city levels;
- Develop appropriate enabling and regulatory frameworks;
- Enhance the credit worthiness of municipalities; and
- Integrate the poor with the service delivery system.

The preparation of CDP of the city is the first step towards achieving the Mission objective which shall further call for preparation of Detailed Project Reports (DPRs) for the identified projects, as per priority in the CDP.



The duration of the Mission is seven years beginning 2005-06. During this period, the Mission shall seek to ensure sustainable development of select cities. If need be, the program shall be calibrated before the commencement of the Eleventh 5-Year plan.

[1] Government of India: Ministry of Urban Development and Ministry of Urban Employment and Poverty Alleviation, 'Jawaharlal Nehru National Urban Renewal Mission (JNNURM) – *Towards better cities…*', December 1995.

1.1.2 Mission Statement

The ever-increasing number of slum dwellers causes tremendous pressure on urban basic services and infrastructure. In order to cope up with massive problems that have emerged as a result of rapid urban growth, it is imperative to draw up a coherent urbanisation vision and strategy for implementation of projects aimed towards achieving the outlined vision. The aim of the Mission is to encourage reforms driven, fast track, planned development of identified cities with focus on efficiency in urban infrastructure and service delivery mechanisms, community participation, and accountability of Urban Local Bodies (ULB)/ parastatal agencies towards citizens.

1.2 Objects, Coverage & Outcomes

1.2.1 Objects

The primary objective of the JNNURM is to create productive, efficient, equitable and responsive cities. In line with this objective, the Mission focuses on –

- Integrated development of infrastructure services;
- Securing linkages between asset creation and maintenance for long-run project sustainability;
- Accelerating the flow of investment into urban infrastructure services;
- Planned development of cities including the peri-urban areas, outgrowths (OG), and urban corridors;
- Renewal and redevelopment of inner city areas; and
- Universalisation of urban services so as to ensure their availability to the urban poor.

1.2.2 Coverage & Thrust Areas

The JNNURM is designed to support the thrust sectors[2] as under –

- Water supply including setting up of desalination plants;
- Sewerage and sanitation;
- Solid waste management including hospital waste management;
- Construction & improvement of drains & storm water drainage system;
- Road network;
- Urban transport;
- Construction and development of bus and truck terminals;
- Renewal and re-development inner city areas;
- Development of heritage areas;
- Preservation of water bodies;
- Integrated development of slums, i.e. housing and development of infrastructure in slum settlements;
- Provision of basic services to the urban poor; and
- Street lighting.

Land costs are not to be financed except for acquisition of private land for schemes/ projects in the NE & hilly states – HP, UA & J&K.

The main thrust of the sub-Mission on Urban Infrastructure and Governance[3] is on major infrastructure projects such as the following, and redevelopment of inner (old) city areas with a view to upgrading infrastructure therein, shifting industrial/ commercial establishments to conforming areas etc:

- Urban renewal i.e. redevelopment of inner (old) city areas (widening of narrow streets, shifting of industrial/ commercial establishments from non-conforming areas, renewal of sewerage/ drainage/ solid waste disposal systems etc);
- Water supply (including desalination plants) and sanitation;

- Sewerage and solid waste management;
- Construction and improvement of drains/ storm water drains;
- Urban transport, including roads, highways/ expressways/ MRTS, metro projects;
- Parking lots/ spaces on public-private partnership (PPP) basis;
- Construction and development of bus and truck terminals;
- Development of heritage areas;
- Preservation of water bodies;

The main thrust of the sub-Mission on Basic Services to the Urban Poor[4] is integrated development of slums through projects for providing shelter, basic services and other related civic amenities with a view to provide utilities to the urban poor. The admissible components towards are –

- Integrated development of slums, i.e. housing and development of infrastructure projects in the slums;
- Projects involving development/ improvement/ maintenance of basic services to the urban poor;
- Slum improvement and rehabilitation projects;
- Projects on water supply, sewerage, drainage, community toilet, baths;
- Houses at affordable costs for slum dwellers/ urban poor/ EWS/ LIG categories;
- Construction and improvements of drains/ storm water drains;
- Environmental improvement of slums and solid waste management;
- Street lighting;
- Civic amenities like community halls, child care centres etc;
- Operation and maintenance of assets created under this component;
- Convergence of health, education and social security schemes for the urban poor.

There are certain components that are not admissible[5,6] for the purpose of funding under the Mission, viz. –

- Power;
- Telecom;
- Health;
- Education;
- Wage employment program and staff component.

1.2.3 The Outcome

The Mission expects that proper application of the reform agenda combined with effective implementation of its programs and projects shall result in –

- Universal access to a minimum level of services;
- Establishment of city-wide frameworks for planning and governance;
- Modern and transparent budgeting, accounting, and financial management system at municipal levels;
- Financial sustainability for municipalities and other service delivery institutions;
- Introduction of e-governance in core functions of municipal governments; and
- Transparency and accountability in urban service delivery and management.

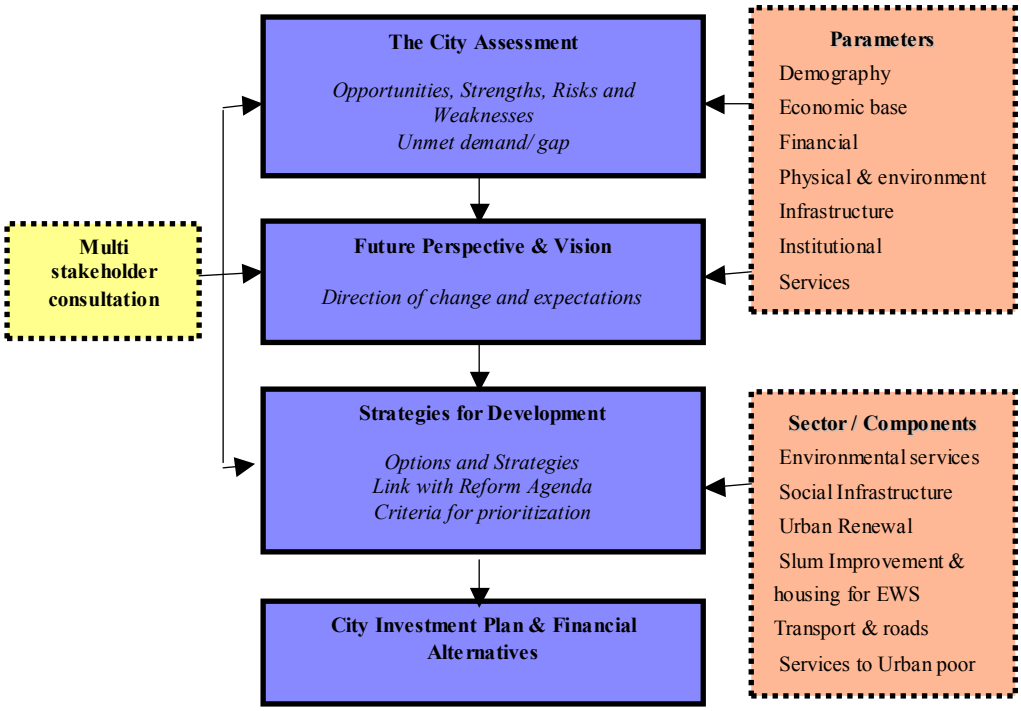
1.3 The Process of CDP Preparation

The CDP provides both a perspective and a vision for the development of a city. It presents the current stage of city's development, sets out directions of change, identifies thrust areas, suggests alternate routes/ strategies/ interventions for bringing about the change, provides framework and vision within which projects need be identified and implemented. It establishes a logical and consistent framework for evaluation of investment decisions.

Anchored on the Mission goal of creating economically productive, efficient, equitable and responsive cities, the CDP focuses on the development of economic and social infrastructure, strategies that deal specifically with issues affecting the urban poor, strengthening of municipal governments and their financial accounting and budgeting systems and procedures, creation of structures for bringing in accountability and transparency, and elimination of legal and other bottlenecks that have stifled the land and housing markets. It provides a basis for cities to undertake urban sector reforms that help direct investment into city-based infrastructure.

The preparation of CDP is a multi-stage exercise, as depicted in the diagram below, involving –

- In-depth analysis of the existing situation, covering the demographic, economic, financial, infrastructure, physical, environmental and institutional aspects;
- Development of a perspective and a vision of the city;
- Formulation of strategy for bridging the gap between where the city is and where it wishes to go; and
- Preparation of City Investment Plan (CIP) and a financing strategy.

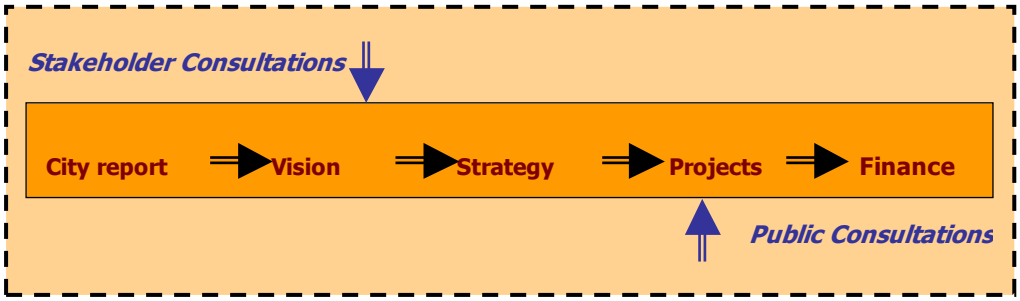


1.4 Detailed Methodology Adopted

In order to achieve the objectives outlined in the JNNURM toolkit, and following the process recommended therein, the following methodology has been adopted for the preparation of the CDP for Allahabad city. It broadly involved three steps as discussed hereunder –

- Situation Analysis (Rapid City Assessment)
- Formulation of Vision, Strategies and Projects
- City Investment Plan and Financing Strategy

It is essential for a city to systematicall y think of the future, and determine how it wishes to shape that future.



Step I: Situation Analysis (Rapid City Assessment)

Assessment of the city (situation analysis) has primarily been done on the basis of –

- Secondary reports/ documents made available by the various concerned offices (government departments, parastatals, others);
- Internet based research;
- Reconnaissance surveys carried out by different members of the team and their local resource person;
- Numerous focus group discussions and interactions with the city administration and other officials/ stakeholders; and
- Rapid appraisals through meetings with people, former municipal councillors, and few leading personalities/ city luminaries.

SWOT –

ULBs/ parastatal agencies/ others

Factors for inefficient & inadequate production & delivery of urban services

Managerial deficiencies/ financial constraints

Critical factors & remedial measures

Step II: Formulation of Vision, Strategies and Projects

- SWOT analysis into strengths, weaknesses, opportunities and threats;
- Critical assessment of city development and functioning of the city government – short term, medium term, and long term;
- Careful selection of stakeholders – government officials and community representatives;
- Clearly formulated stakeholder workshops for detailed interactions with pre-identified focus groups and goals;

- Consolidation of city vision and strategies towards it at the State level stakeholder workshop;
- Firming up the thrust areas and projects in consultation with the city administration (DM & Administrator);



Examples of best practices from Hyderabad, Vijaywada, Ahmedabad & Surat have been taken. These relate to out-sourcing (80%), SWM, e-governance & night sweeping respectively.

Step III: City Investment Plan and Financing Strategy

- Broad cost estimates for all development activities – projects, capacity building programs, O&M issues;
- Development phasing and prioritisation of activities;
- Identification of benefits of the various development/ infrastructure projects;
- Review of best practices at the country level in terms of solid waste management, maintenance of cleanliness, outsourcing of various activities/ responsibilities, administration and e-governance etc;
- Identification of mandatory/ optional institutional and financial reforms at the state and city levels for improved service delivery, system improvement, improved revenue situation, transparency and accountability;
- Application of best practices as regards service delivery, pub-private participation, and e-governance.

Annex 1 gives details of consultations/ meetings/ discussions with various authorities including the former Mayor, corporators etc.

Proceedings of Workshops I and II held at Allahabad in May and July respectively are given as *Annex 7 and 7b.* Two further workshops were conducted at the state level to present the progress of the exercise of preparation of CDP for Allahabad.

2.0 City Profile

2.1 Introduction

Allahabad (25°28′ N latitude, 81°54′ E longitude; 98 masl), founded by Moghul Emperor Akbar in the year 1575 AD by the name of 'Illahabas', is the modern Allahabad to today, and a typical third tier city of north India. It is today an important city where history, culture and religion create a magical confluence, much like the sacred rivers that caress this blessed land. The city is located in alluvial plains of Rivers Ganga and Yamuna (*Figure 1*).

2.2 Geographic Characteristics

There can be three distinct physical parts of the city, quite like the district itself – (i) Trans-Ganga or the Gangapar Plain, (ii) the Ganga-Yamuna doab (confluence), and (iii) Trans-Yamuna or the Yamunapar tract, all three of which are formed by Ganga and its tributary Yamuna, the latter joining the former at Allahabad, the confluence being known as sangam. General topography of the city is plain with moderate undulations.

The climate of Allahabad is characterised by a long and hot summer, a fairly pleasant monsoon and the winters. The winter season usually extends from mid-November to February and is followed by the summer which continues till about the middle of June. The southwest monsoon then ushers in the rainy season which lasts till the end of September. October and the first half of November constitutes the post-monsoon season.

The railway station is an important junction of the Indian Railways. Spread over an area of approximately 67 km^2 (*Figure 2*), Allahabad is an important centre of education and business, and one of the least industrialized and least polluted cities in east Uttar Pradesh (UP).

2.3 Connectivity

Allahabad is well connected with other parts of the country by rail and road networks. Existing NH-2 (Grand Trunk Road) divides the city into two parts. The World Bank has approved a $240 million loan to the Government of India for the Allahabad Bypass project, a part of the NH Development Program (NHDP). The 84.02 km Allahabad Bypass on NH-2 is the last remaining section of the 6,000 km Golden Quadrilateral that will connect Delhi, Mumbai, Chennai and Kolkata by the end of 2005. It will be located at the northern outskirts of Allahabad city and is designed, as a 4-lane, access-controlled highway with a 1 km bridge over Ganga. Once constructed, this would relieve the city from through traffic. NH-27 provides a direct link with Madhya Pradesh. This corridor has a heavy vehicular traffic because it serves as a passage for the movement of cement, grains and pulses to Lucknow, Kanpur and several parts of UP. In the northern part of the city, Pratapgarh Road (SH) provides connectivity to Lucknow and Rae Bareilly.

The city lies on Delhi-Calcutta rail route of Eastern Railways and has direct rail connections with important cities *viz*. Kolkata, Delhi, Patna, Guwahati, Chennai, Mumbai, Gwalior, Meerut, Lucknow, Kanpur and Varanasi. There is no air link to Allahabad. The nearest airports are Varanasi (147 km) and Lucknow (210 km).

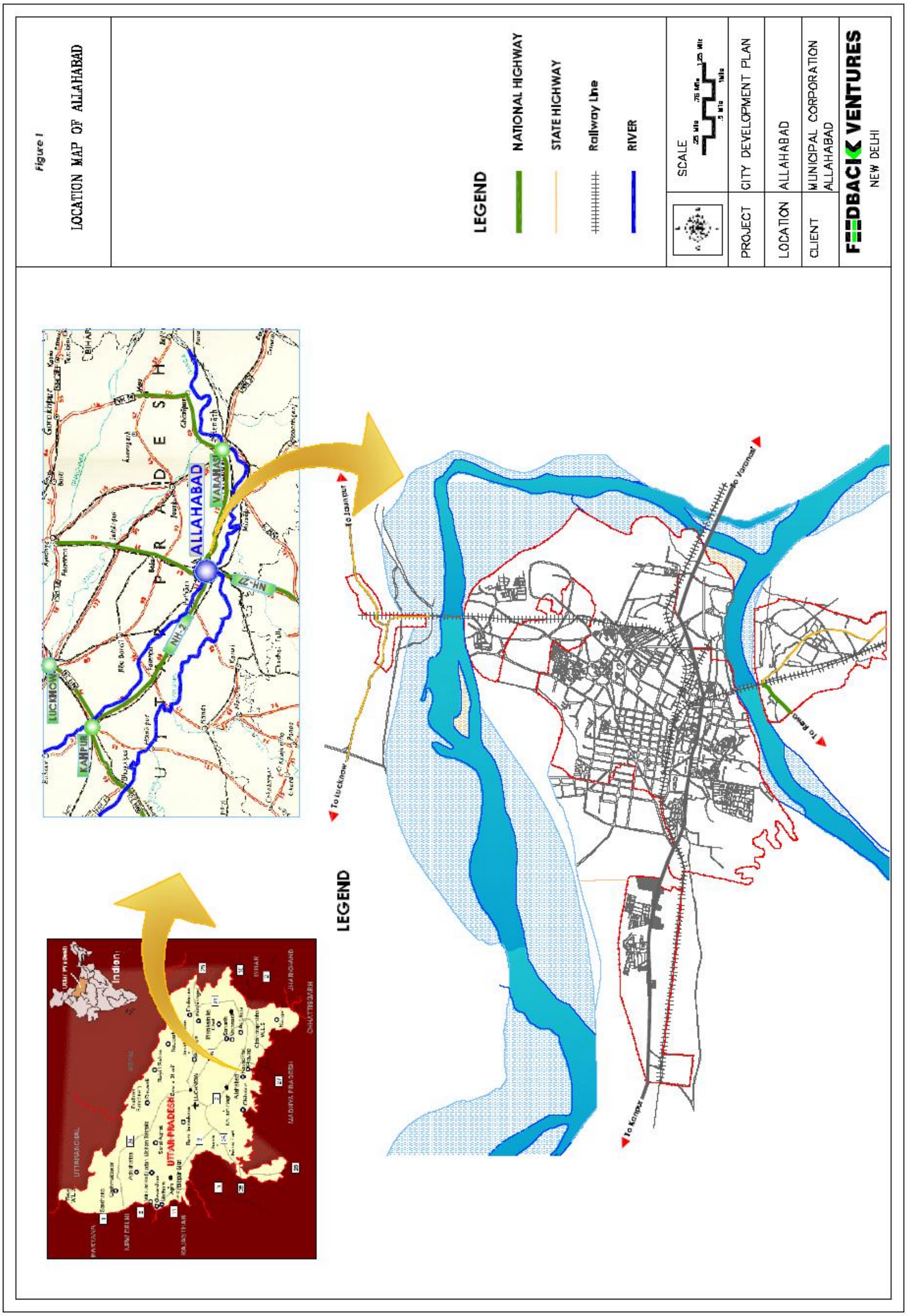


Figure 1
LOCATION MAP OF ALLAHABAD
LEGEND
NATIONAL HIGHWAY
STATE HIGHWAY
Railway Line
RIVER
SCALE
PROJECT
CITY DEVELOPMENT PLAN
LOCATION
ALLAHABAD
CLIENT
MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
LEGEND
To Jaunpur
To Varanasi
To Rewa
To Kanpur
To Lucknow
ALLAHABAD
VARANASI
LUCKNOW
KANPUR
UTTAR PRADESH

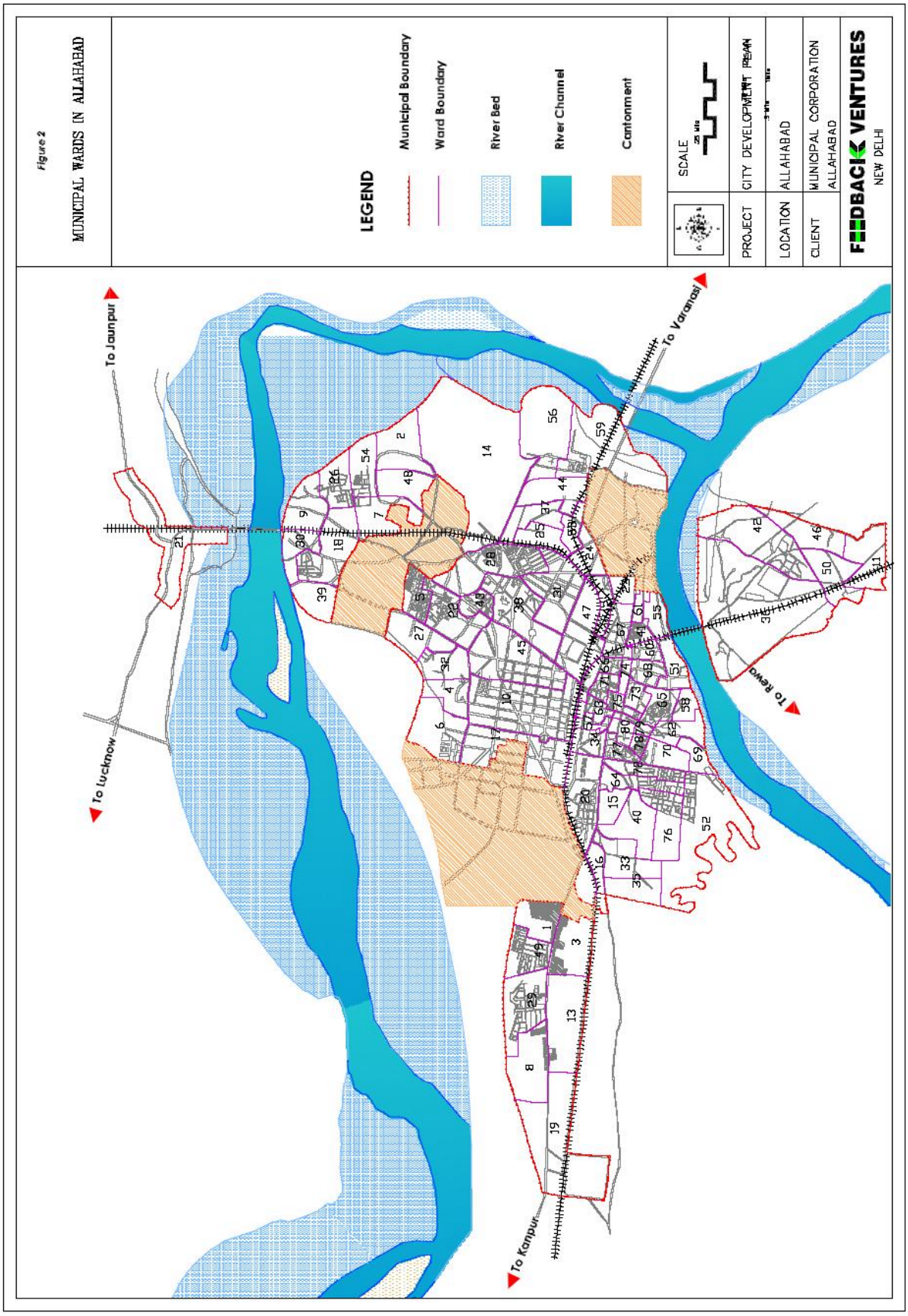


Figure 2
MUNICIPAL WARDS IN ALLAHABAD
LEGEND
Municipal Boundary
Ward Boundary
River Bed
River Channel
Cantonment
SCALE
PROJECT
CITY DEVELOPMENT PLAN
LOCATION
ALLAHABAD
CLIENT
MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
To Jaunpur
To Varanasi
To Lucknow
To Rewa
To Kanpur

3.0 Demographic Profile

3.1 Introduction

The Census of India (CoI) 2001 has considered the city of Allahabad in three regions namely the Municipal Corporation of Allahabad (MCA), the city outer growth (OT) and the Allahabad Cantonment (CB). The municipal area of the city, which is approximately 82 km^2, has a population of 975,393 (JICA report[7] however quotes it at 1.1 million) and is divided into 70 wards for administrative convenience. The continuum of urban development in the municipal limits is fragmented by the interception of multiple cantonment areas. The CB area has 7 wards and supports a population of 24,137 persons (*Table 1*).

Apart from these areas, the city is bound on three sides by Ganga and Yamuna and its growth spills across the river by the virtue of transport connectivity of bridges to the Phaphamau area to north, Jhusi to east and Naini to south. Continuous growth westwards is limited by the presence of a part of cantonment. These areas are considered as the outer growth areas and consist of 17 wards.

Therefore including the CB area, the city has 87 wards and a population of 1,018,092. If taken alone the city has a population of 975,393 persons and is divided into 80 wards (till late, there were only 70 wards; *Figure 2*). Also, due to its religious sanctity and importance, there is a large influx of tourists for pilgrimage and performance of last rites.

Table 1: Population of Allahabad

Year	Area	Total Population
2001	Municipal Corporation	975,393
	Municipal Corporation + Outer Growth	1,018,092
	Cantonment Board	24,137

Source: Census of India, 2001

3.2 Demographic Trends

3.2.1 Population Growth

As is evident from *Table 2* the population of the city has been growing continuously and there has also not been much variation in the growth rates over the past few decades except for the decade 1961-71. In this particular decade the growth rate of the city had fallen to 19.11%, the reasons for which are unknown. Apart from that Allahabad has been growing at a pace faster than the state (*Figure 3*).

Allahabad happens to be the least populated city among the KAVAL cities of Uttar Pradesh. It also has the third highest growth rate in the state, only next to Lucknow and Agra (*Table 3*).

Table 2: Decadal Growth of Population

Year	Uttar Pradesh	Growth Rate	Allahabad	Growth Rate
1951	63200000	--	332,295	--
1961	73800000	16.77%	430,730	29.62%
1971	88300000	19.65%	513,036	19.11%
1981	110900000	25.59%	650,070	26.71%
1991	132000000	19.03%	844,546	29.92%
2001*	--	--	1,200,000	42.08%
2001**	166200000	25.91%	1,081,622	28.07%

Source: JICA Report[8]

** Allahabad Master Plan 2021*

*** Census of India, 2001*

Figure 3: Population Growth

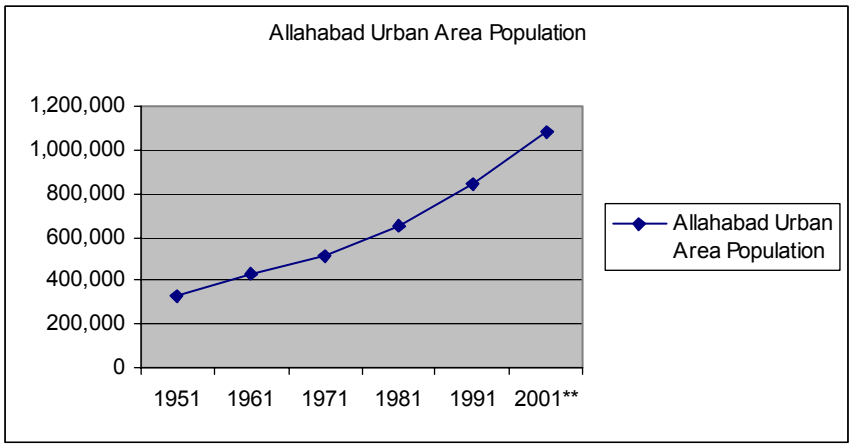


Table 3: Population Growth in KAVAL Cities

KAVAL Cities	1981	1991	2001	Growth Rate	
				81-91	91-01
Kanpur	1,639,064	2,029,889	2,555,811	23.84	25.91
Lucknow	1,007,604	1,669,204	2,185,927	65.66	30.96
Agra	741,318	948,063	1,275,134	26.86	34.50
Varanasi	773,865	1,030,863	1,202,443	33.00	17.09
Allahabad	650,070	844,546	1,081,622	29.92	28.07

Source: UP Census Handbook 1991

3.2.2 Population Density

Overall the city of Allahabad is an averagely populated city barring few wards of the old city. The following *Table 4* depicts the current status of population densities across the city: the maximum number of wards (41) have a density less than 200 persons per hectare (pph) followed by 27 wards where density ranges between 200 and 400 pph; 6 wards have populations between 400 and 600 pph while it is only 6 wards where the density crosses 600 pph. This is also depicted in *Figure 4*. Muthhigang Part I is one ward where the density of 1253 pph is the maximum in the city (*Annex 2*).

Table 4: Classification of Wards by Population Densities

Density	Number of wards	Ward Reference (No)
< 200 pph	41	1,2,3,6,7,8,9,10,11,13,14,17,18,19,20,21,22,26,27,28,29,31, 32,33,36,38,40,42,44,45,46,47,48,49,50,52,54,56,59, 67,76
200-400 pph	27	4,5,12,15,16,24,25,30,34,35,37,39,43,51,53,55,58,62,63, 64, 65,66,68,69,70,71,72
400-600 pph	6	23,41,73,75,77,80
> 600 pph	6	57,60,61,74,78,79

Source: Analysis of data from DUDA

3.2.3 SC/ ST and OBC Population

As per the CoI 2001, the Scheduled Cast population in the city is 136,183 persons which approximately makes 13% of the total city population. The scheduled tribes count to a mere 500 in numbers.

3.2.4 Sex Ratio

The sex ratio in the city has been constantly lower than the state average and the situation does not seem to be improving. The preceding decade 1991-2001 has again seen a fall when on the contrary the state averages registered improvements since the year 1971.

Table 5: Sex Ratio in Allahabad

Year	Allahabad	Uttar Pradesh
1971	784	821
1981	811	846
1991	811	862
2001	809	-

Source: Census of India, 2001

3.2.5 Literacy Rate

The city of Allahabad has always been known for the presence of premier educational institutes and the trend of education seems to reflect in the literacy rate as well. The Census of India, 2001 records 80.9% of city population to be literate, which is the highest in the region (*Table 6*); the prevailing gender gap however is an issue of concern. There is an overall improvement from the past decade (1991) when the literacy rate in the city has been 62.8%[9]. Male population has a higher literacy level with 70% being reported as literate and only 53.7% of females reported as literates.

Table 6: Literacy Rates in KAVAL Cities

City	Total literacy rate	Male	Female	Gap
Kanpur	78.8	82.9	73.9	9.0
Agra	70	81.7	71.9	9.8
Varanasi	72.0	78.8	64.2	14.6
Allahabad	80.9	86.1	74.3	11.7
Lucknow	77.1	76.3	62.6	13.7

Source: Census of India, 2001

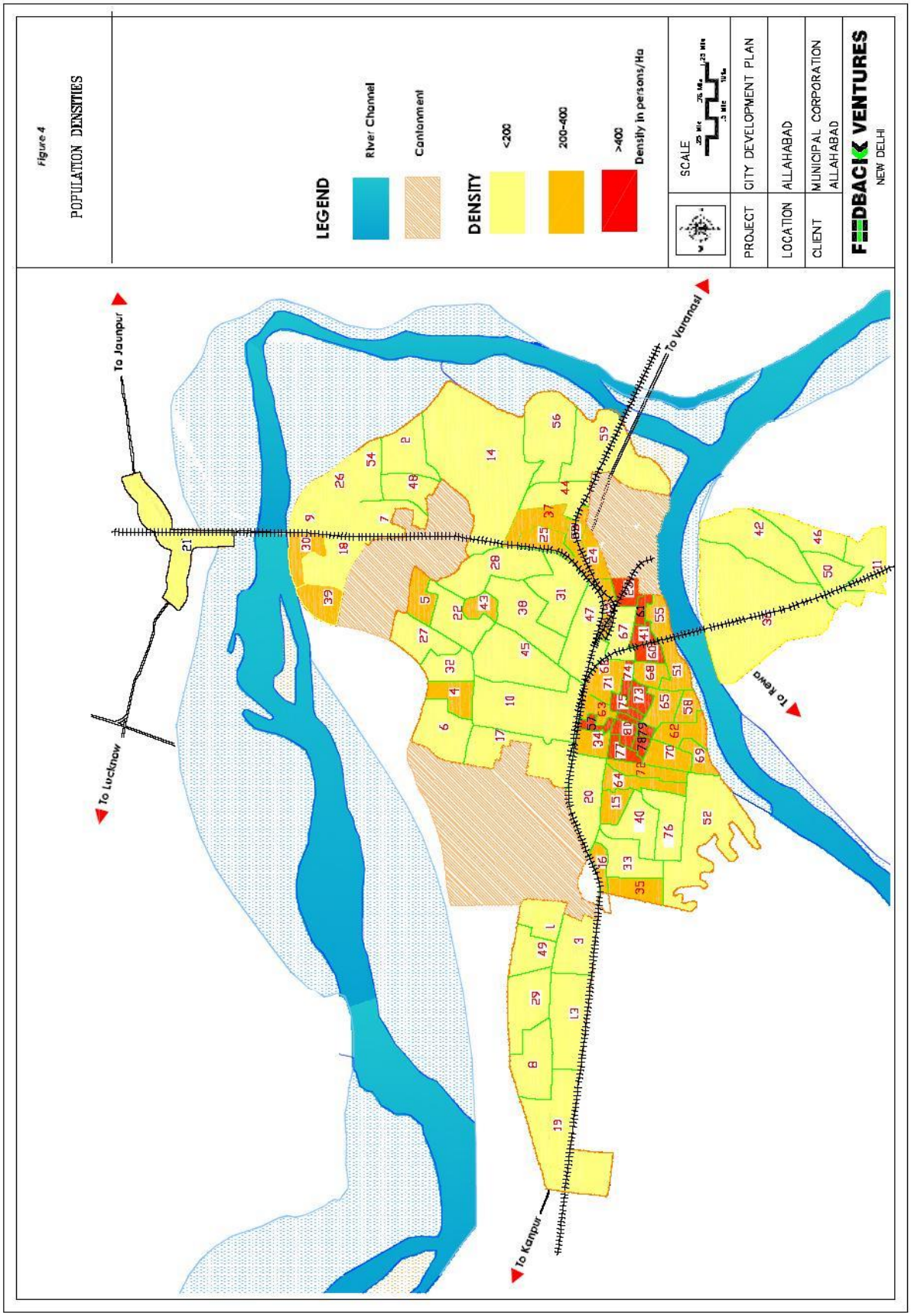


Figure 4
POPULATION DENSITIES
LEGEND
River Channel
Cantonment
DENSITY
<200
200-400
>400
Density in persons/Ha
SCALE
PROJECT
CITY DEVELOPMENT PLAN
LOCATION
ALLAHABAD
CLIENT
MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
To Jaunpur
To Varanasi
To Lucknow
To Kanpur
To Kewd

3.3 Migration Trends

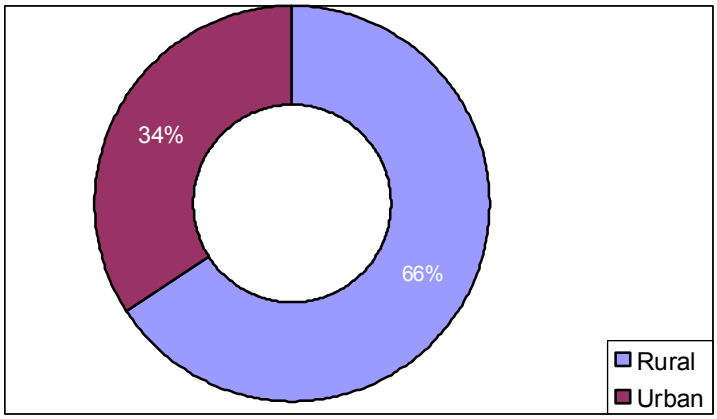
A migrant is defined as a person who has moved into the city for some reason and has been residing in the city for less than 9 years. As per CoI 2001 migration table D-3, there have been a total of 41,495 migrants residing in the city limits in the year 2001 (*Table 7, Figure 5*).

Table 7: Migration in Allahabad

Rural/ Urban	Total migrants		
	Persons	*Males*	*Females*
Total	41,495	29,470	12,025
Rural	23,367	17,490	5,877
Urban	12,065	7,287	4,778

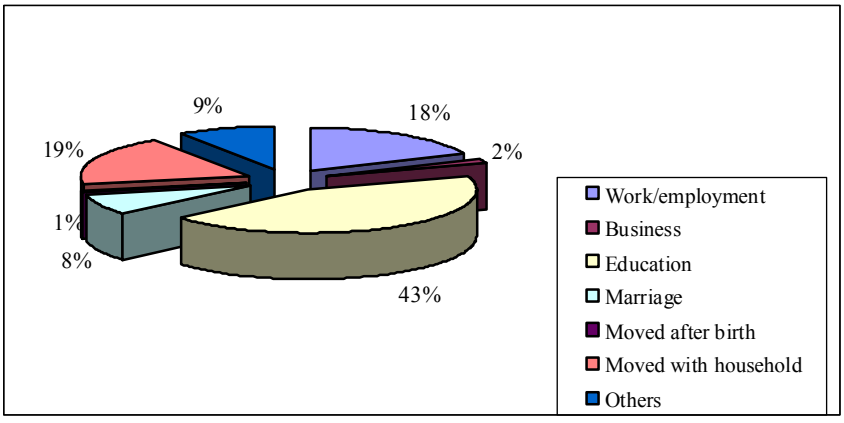
Source: Census of India 2001

Figure 5: Break-up of Migration



One of the principal reasons for rural-urban migration is the quest for better education. This is followed by employment seekers and people who have moved with their households (*Table 8*). 66% of the migrant population is from rural areas (*Figures 6-7)*. Of these, a large chunk (43%) comes to the city for the purpose higher education. The other reason where the communities from the two areas differ is marriage: 16% and 8% of population in urban and rural areas is migrating for matrimony.

Figure 6: Percentage of Migrants from Rural Areas



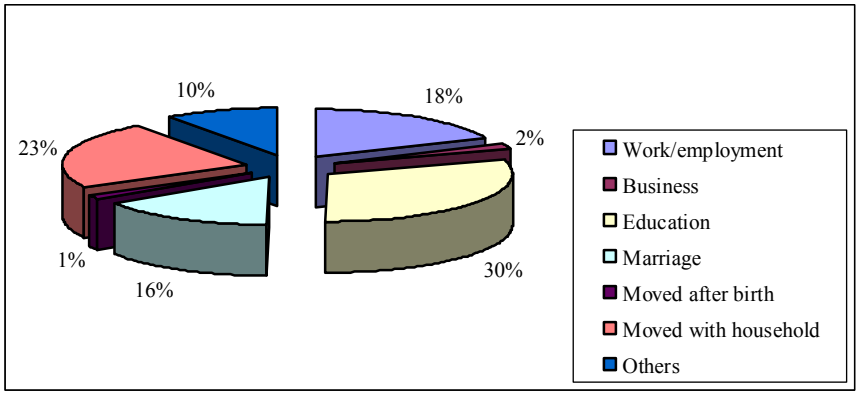
Source: Census of India 2001

Table 8: Migration in Allahabad with Reasons for Migration

Reason for Migration	M/F	Total	Rural	Urban
Work/employment	Persons	6,762	4,259	2,216
	Males	5,936	3,812	1,908
	Females	826	447	308
Business	Persons	649	387	223
	Males	525	323	170
	Females	124	64	53
Education	Persons	14,344	10,188	3,613
	Males	13,420	9,761	3,129
	Females	924	427	484
Marriage	Persons	3,899	1,863	1,897
	Males	137	48	84
	Females	3,762	1,815	1,813
Moved after birth	Persons	278	125	145
	Males	138	62	72
	Females	140	63	73
Moved with household	Persons	7,403	4,326	2,770
	Males	3,114	1,854	1,115
	Females	4,289	2,472	1,655
Others	Persons	8,160	2,219	1,201
	Males	6,200	1,630	809
	Females	1,960	589	392
Total		**41,495**	**23,367**	**12,065**

Source: Census of India 2001

Figure 7: Percentage of Migrants from Urban Areas



Source: Census of India 2001

3.4 Social Composition

3.4.1 Social Stratification and Cultural Features

Allahabad is largely inhabited by two communities, Hindus and Muslims. Though the exact population figures of both the communities are not available, the general understanding is that Hindus dominate the city in terms of numbers.

The city is of religious importance to the Hindus as it is situated at the holy confluence of Ganga, Yamuna and invisible Saraswati. There are festivals, big

and small, which are celebrated with pomp and show and attract a large number of people from various parts of India. The main festivals include *Mahashivratri* in the month of February, *Holi* in the month of March, *Navratri* in the months of March-April culminating in *Ramnavami*, and *Krishna Janmashthami* in August-September.

The Hindu month of *Magh* is from mid-January to mid-february. During this month, a great gathering and fair called *Magh Mela* takes place on the sands. Every 12th year when the waters are felt to be especially purifying, Allahabad holds a much greater festival called *Kumbh Mela*. Many millions of pilgrims attend this festival, coming from all over India. It is believed that bathing during *Kumbh* cures one of all sins and evils and grants him salvation.

There are some specific days in the year when Hindus take dip in holy river Ganga. Important among them are *Paush Purnima and Makar Samkranti* in January *Mouni Amvasya* And *Basant Panchami* and *Magh Purnima* in Februray and Mahashivaratri in March; and,

One very important fact is that the city has always been known for its *Babu Culture* implying slow and lazy nature of people. For the same reason it is also named as the *Sleepy City*.

3.4.2 The Kumbh Mela

This is a very important event that takes place every three years, alternately at four locations in India. These are Prayag, at the confluence of three rivers Ganga, Yamuna and the mythical river, Saraswati, Haridwar (Uttaranchal), where the river Ganga enters the plains from Himalayas, Ujjain (Madhya Pradesh), on the banks of Kshipra river and Nasik (Maharashtra) on the banks of Godavari river.

The mela is classified in 4 categories as under –

i) *Maha Kumbh Mela*: occurring every 144 years;
ii) *Purna Kumbh Mela*: takes place after every twelve years and the last one took place in 2001. Millions of Hindus bathe in Ganges for purification. It is an ancient tradition that is sacred and gives inner peace;
iii) *The Purna* (complete) *Kumbh* or *Maha Kumbh*: the biggest and the most auspicious fair, which falls once every 12 years, is always held at Allahabad, for the 'Sangam' or the confluence of rivers is considered to be exceptionally sacred;
iv) *Ardh Kumbh*: held in the 6th year after Kumbh Mela, i.e. it falls between two *Kumbh Melas*. It has got the same religious value and attracts millions of people. It has the same main bathing days as in *Kumbh Mela*;
v) *Kumbha Mela*: the mela is held every three years, rotating through the four cities of Prayag, Nasik, Haridwar and Ujjain;
vi) *Magh Mela*: the annual mini *Kumbh* is held every year except the years of *Kumbh Mela* and *Ardh Kumbh Mela. Magh Mela* is held in the month of *Magh* (Jan-Feb); hence the name. During this period, about two or three million devotees throng this place.

On all these occasions the city government makes special provisions because millions of devotees throng the city. The last *Purna Kumbh* mela organised in 2001 attracted 10.5 million devotees to the city (*Table 9*).

Table 9: Floating Population during Kumbh Mela

Year	No of Devotees visiting (in lakhs)
1954	60
1966	70
1977	100
1989	150
2001	1050

The next *Ardh Kumbh mela* is to be held in January 2007 for which the city's administration needs be prepared. For the management of *mela*, a committee as follows, has been constituted:

- The Chairman, Allahabad Development Authority (ADA) or a nominated officer
- District Magistrate (DM), Allahabad or a nominated officer;
- Secretary, ADA;
- Joint Director, Town and Country Planning Department (TCPD), Allahabad;
- *Mela* Adhikari, *Kumbh mela*, Alllahabad.

The *Mela* Adkhari heads a *Kumbh mela* Cell which coordinates all activities by various departments for the *mela*.

3.5 Population Projections

Population projection is important and a basic requirement for foreseeing and provisioning the requirement of basic services to the people. It is also required to plan the service delivery and revenue realization from the users in a city which is a direct function of population and its growth. The city of Allahabad has a uniquely different growth character, complemented by the movement of people from surrounding areas for education and occupational reasons, tourist traffic as a result of its heritage and religious value, and special events of spiritual importance of River Ganga and the confluence of Ganga, Yamuna and the invisible Saraswati. The OG and urban villages make the situation complex by falling back on city infrastructure to cater to their demand as well.

The base data for population projection is the CoI data which provides the numeric basis for benchmarking the actual population and its decadal growth for the past decades. Considering the growth rates as have been estimated by the Master Plan 2021, the projected population of the city shall be 1637296 for the year 2011 and 2043735 for 2021. Based on these two projected figures, the average annual compound growth rate has been calculated by taking the n^{th} root of the total percentage growth rate where n is the number of years in the period being considered. This can be written as –

$$CAGR = \left(\frac{\text{Ending Value}}{\text{Beginning Value}}\right)^{\left(\frac{1}{\#\text{ of years}}\right)} - 1$$

The projected figures for the project duration with an interval of five years have been worked out, as in *Table 10* below.

Table 10: Projected Population for Allahabad (MC+OG)

Year	Average Annual Compounded Growth Rate	Projected Population
2001		1081622
2006	4.23	1336891
2011	4.23	1637269
2016	2.24	2023674
2021	2.24	2043735
2026	1.89	2526068
2031	1.89	2463893

3.6 Key Issues

Based on the above analysis following issues have emerged with regard to the demographic characteristic of the city –

- The population of Allahabad is growing at a constant rate;
- The sex ratio in the city is declining every year and is much lower that the State average. One of the reasons might be the in-migration trend but this is a point of concern;
- The city attracts a lot of in-migrants, largely for the purpose of education. The migrant population, though will be floating in nature, is likely to increase the demand for housing. The people coming in for settling in the city and service are likely to increase demand in the EWS/ LIG sections of housing. If not planned, increase in slum settltments/ population and the unplanned growth shall increase;
- The abnormally high density within the inner city has led to unhygienic living conditions and is a potential health hazard. The low density in the remaining part of the town has led to urban sprawl thus increasing the distribution network of the urban services;
- The positive feature of Allahabad is that large parcels of vacant lands are available and currently the densities are low, except for the core of old city. Land availability is not in question, but affordability definitely is;
- The growth in population is also likely to stress already stressed public transport and will have impact on other services, hence planned efforts are required to guide the growth in right direction;
- The literacy data for the city indicates bias against the fairer sex, when even though it has 80% literates (which is highest compared to other KAVAL cities), the male-female gap is 11%; i.e. 11% more males are educated compared to the females. Overall efforts have to be made stressing on education of the female child;
- The next *Ardh Kumbh* is to be held in 2007, when a huge influx of people is expected so lots of arrangements need to be made. This is the time when people from rural areas in vicinity of the city travel here in search of work and many of them tend to settle down. This is the time when new slums mushroom.

4.0 Economic Base

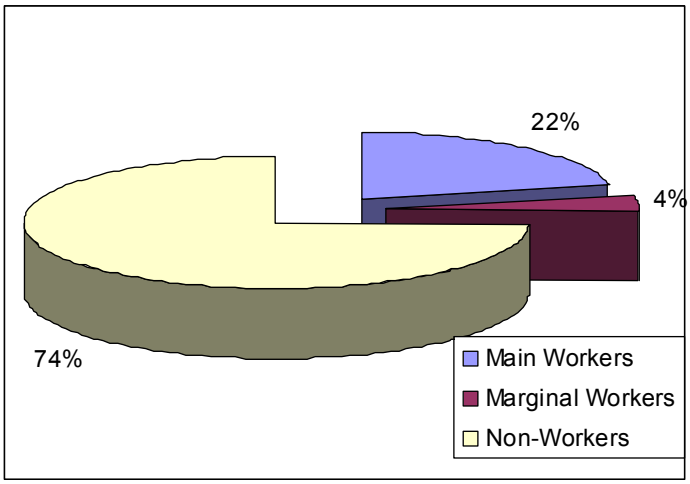
4.1 Introduction

Allahabad has traditionally been well known for its educational institutions, the University, High Court and centres of pilgrimage, intellectual and socio-political activity, The city's economy however, has for the past many years been thriving on the tertiary sector activities.

4.2 Employment Profile

The workforce classification as per CoI 2001 reveals a very grim picture. About 74% of the workforce is non-worker that reflects on the poor economic status of the city and lack of adequate employment opportunities (*Figure 8*).

Figure 8: Workers in Allahabad City



Source: Census of India 2001

Table 11: Workers in the Allahabad City

Category of Workers	Break-up	No of persons	
		Allahabad (MC+OG)	MCA
Total Workers	Total	260034	249597
	Male	225915	216671
	Female	34119	32926
Main Workers	Total	220177	211320
	Male	195182	187115
	Female	24995	24205
Marginal Workers	Total	39857	38277
	Male	30733	29556
	Female	9124	8721
Non-Workers	Total	758058	725796
	Male	336949	323101
	Female	421109	402695

Source: Census of India 2001

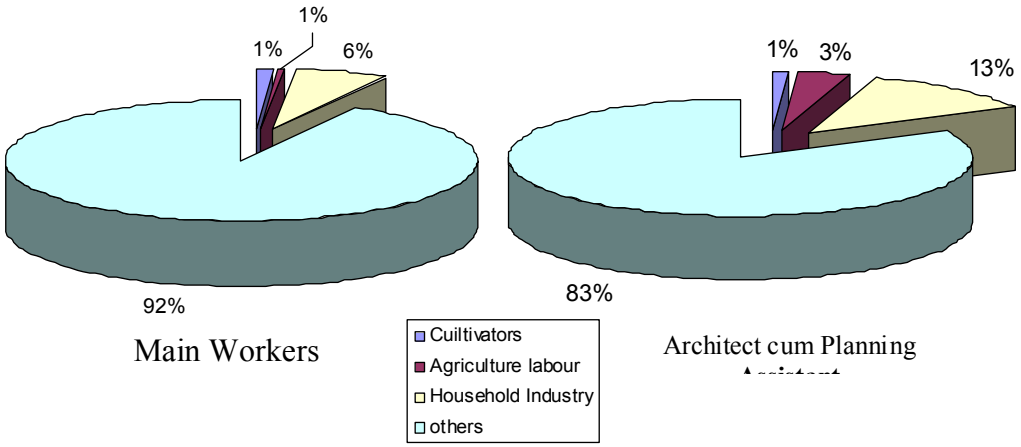
Table 12: Main Workers Classified by Category

Category of Workers	Area	Cultivators	Agriculture Labour	Household Industry	Others
Main Workers	Allahabad (MC+OG)	2613	1318	14084	202162
	MCA	2522	1240	13627	193931
Marginal Workers	Allahabad (MC+OG)	456	1373	5126	32902
	MCA	438	1325	4954	31560

Source: Census of India 2001

Table 11 gives the break-up of workers by sex in the various categories – main-, marginal- and non-worker categories at both MCA and agglomeration levels. These figures are further distributed into cultivators, agriculture labour, household industry and others in *Table 12*. The distribution of main and marginal workers across various categories indicates heavy employment to the tune of 92% and 83% of main and marginal workers respectively in 'others' category (*Figure 9*).

Figure 9: Distribution of Main & Marginal Workers Across Categories



4.3 Dominant Activities

Table 13 reveals that for the past many years the city's economy has been thriving on the tertiary sector activities.

The workforce in the city has been increasing at a constant pace. The primary economy of the city[10] is dependent on the services (tertiary) sector with major contributions from trade and commerce and other services. *Table 14* gives break-up of workforce into different economic sector and depicts decadal increase in the same over the past three decades. *Figures 10, 11, 12 & 13* trace decadal growth of workforce in different sectors.

Table 13: Percentage Distribution of Workforce

Sectors	1951	1961	1971	1981	1991	2001
Primary	4.02	3.73	4.40	4.10	4.76	3.00
Secondary	23.26	24.57	26.58	28.20	17.78	30.00
Tertiary	72.72	71.70	69.02	67.30	77.45	67.00
Trade and Commerce	18.36	16.57	15.25	14.65	26.34	27.00
Transport, Storage and Communication	10.89	12.77	13.35	14.20	7.70	12.50
Others	43.36	42.36	41.48	41.15	43.41	27.50

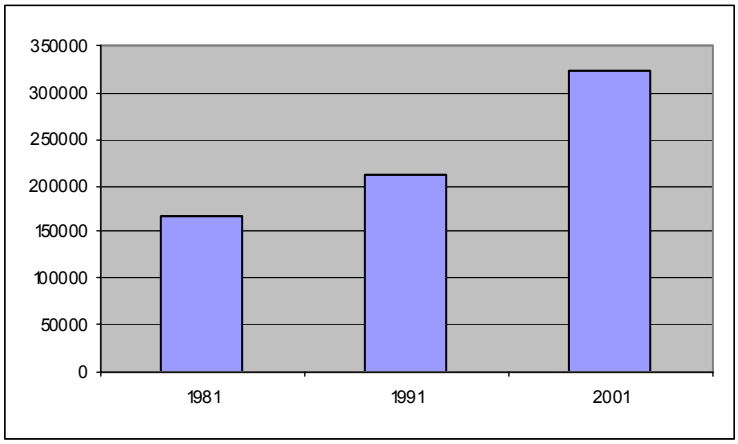
Source: District Census Handbook 1981, and Census of India 2001.

Table 14: Distribution of Workers by Industrial Classification

Sl. No.	Category	1981	1991	2001
1	Primary Sector	8110	10090	9720
2	Secondary Sector	38522	37669	97200
2 i	Manufacturing & Household Industry	7513	10051	24300
2 ii	Other Industries	27071	22475	61560
2 iii	Construction	3938	5143	11340
3	Tertiary Sector	120027	164061	217080
3 i	Trade and Commerce	35690	55795	87480
3 ii	Transportation	17656	16316	40500
3 iii	Other Services	66681	91950	89100
	Total	166659	211820	324000

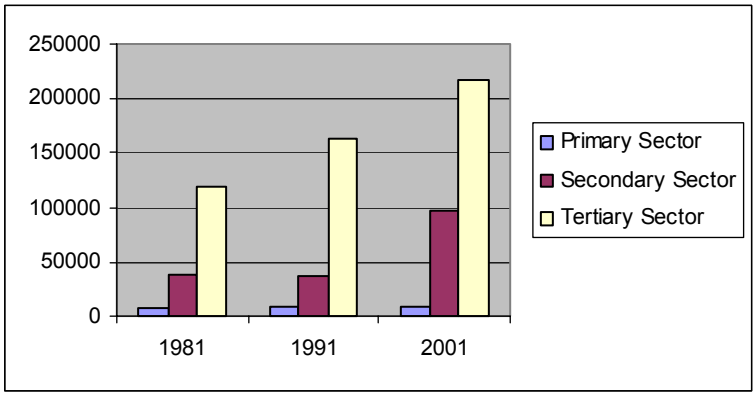
Source: Allahabad Master Plan 2021.

Figure 10: Decadal Growth in Workforce



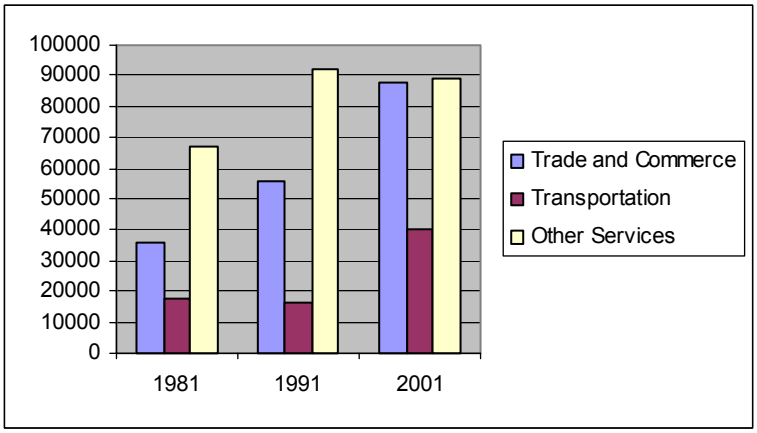
Source: Allahabad Master Plan 2021

Figure 11: Sector-wise Decadal Growth of Working Population



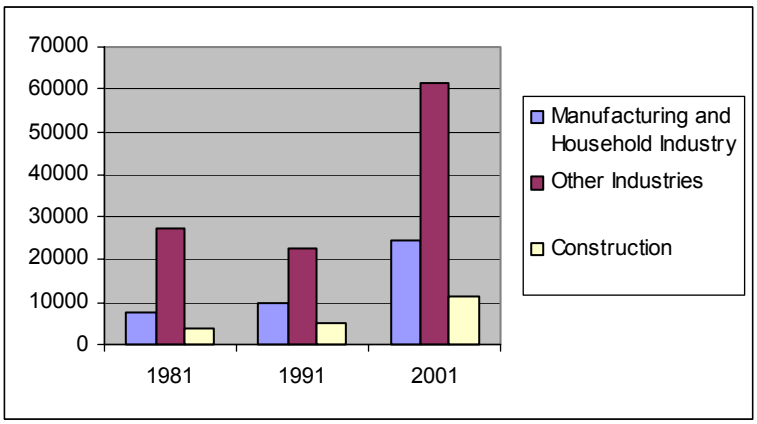
Source: Allahabad Master Plan 2021

Figure 12: Decadal Growth of Workforce in Secondary Sector



Source: Allahabad Master Plan 2021

Figure 13: Decadal Growth of Workforce in Tertiary Sector



Source: Allahabad Master Plan 2021

4.4 Industrial Development

Much effort has been devoted in the recent past to boost industrial development. Naini industrial area was setup with the sole purpose of promoting industries in the region but these efforts have not been very successful. The industrial development has come to a standstill. Out of the

proposed area of 1217.81 ha (Master Plan 2001) to be developed for industries only 482.80 hectares exist in year 2001, which is 2.23% of the proposed area. Most of the existing industries are spread along four main areas in the city –

- Along the Kanpur Road
- Naini
- Phaphamau
- Jhusi – near the junction of Saso and Varanasi Road

The city level consultation attributed it to the poor state of infrastructure and political influences that often hinder the independent and transparent functioning of industrial houses. In a workshop organized by DUDA to discuss the urban problems faced by Allahabad city, entitled *Allahabad Vikas Pehel*, the participants had also observed that there is lack of adequate industrial infrastructure to support industrial sector in the city.

There exists no large scale industry in the city while the medium and small scale industries area traceable in Naini which may be on the brink of closure. The main industrial units, nevertheless are –

- Raymonds Synthetics Limited;
- Hindustan Cables Limited;
- Deys Medicals;
- Sangam Structurals;
- Bharat Rocklite Plastics Petroleum Corporation Limited;
- Indian Telephone industry;
- Triveni Structurals limited;
- Swadeshi Cotton Mills; and
- Baidyanath.

4.5 Trade and Commerce

The commercial structure of Allahabad has its CBD incorporated in the oldest section of the city, Meerganj, housing nearly 70% of the total business of the city. Among the commerce being practiced are – utensil market, cloth market, cycle market, *gur* mandi, spice market, general merchandise, oil and ghee mandi, stationery stores, grain market, timber/ furniture mandi, fruit and vegetable market.

Utensil Market

The entire utensil wholesale as well as retail market occupies the western most section of the Chowk area occupying both sides of Thatheri Lane from Clock Tower to GT Road.

Cloth Market

The old cloth market (Purana Bazar) specializing in wholesale trade of all types of garment material is located in close proximity to Kotwali. Such specialized markets also occur around the Clock Tower, along Lal Diggi Road, Jawahar Square and Mohammad Ali Park area.

Cycle Market

The major concentration of cycle shops is along the Hewett Road crossing, extending from Niranjan Cinema Hall to Hewett Road crossing and from Moti

Mahal Cinema Hall to Allahabad Junction along the Leader Road. These stores provide for assembling of cycles in front of the consumer as per his choice.

Gur Mandi

The *Gur* Mandi is located between GT National Highway and the Bharati Bhawan.

Spice Market

The Spice Market is located along the GT National Highway extending from Church onwards, as well as along the entrance of the Lok Nath Lane.

General Merchandise

The establishments dealing with general merchandise occur continuously as a stretch along the GT National Highway, whereas in Johnstonganj these occur in association with other shops.

Oil and Ghee Mandi

The wholesale mandi for oil and ghee is situated in Meerganj providing all sorts of vegetable cooking oils and ghee. All these are of wholesale nature.

Timber/ Furniture Mandi

The furniture mandi as it is called extends right along the Tilak Road to Bharati Bhawan Road crossing and from there to Suleman Sari Road. This area is also referred to as Bans Mandi, for nearly all timber is supplied from here.

Fruits and Vegetables Market

The main vegetable wholesale market is located in Khuldabad outside the core area of Chowk. It enjoys a strategic location lying on the GT National Highway.

4.6 Key Issues

- A large chunk of workforce categorized as non-workers indicates poor economic condition of the city and this is a major point of concern;
- The only sector providing employment seems to be the service sector;
- There is need to generate employment in the city so that the percentage of main and marginal workers can be increased;
- The commercial activities in Allahabad as an urban center are not focused on external factors, but based almost entirely on the daily needs of the local inhabitants. As the population increases annually, concomitantly the inwardly focused trade and commercial businesses also continue to flourish in a limited manner;
- There is need to create certain conditions to act as pull factors for traders and industrialists to invest in the city;
- Tourism is one sector that the city administration can tap for generating economy. Because of the religious significance of the place, a large number of tourists will always be visiting the city.

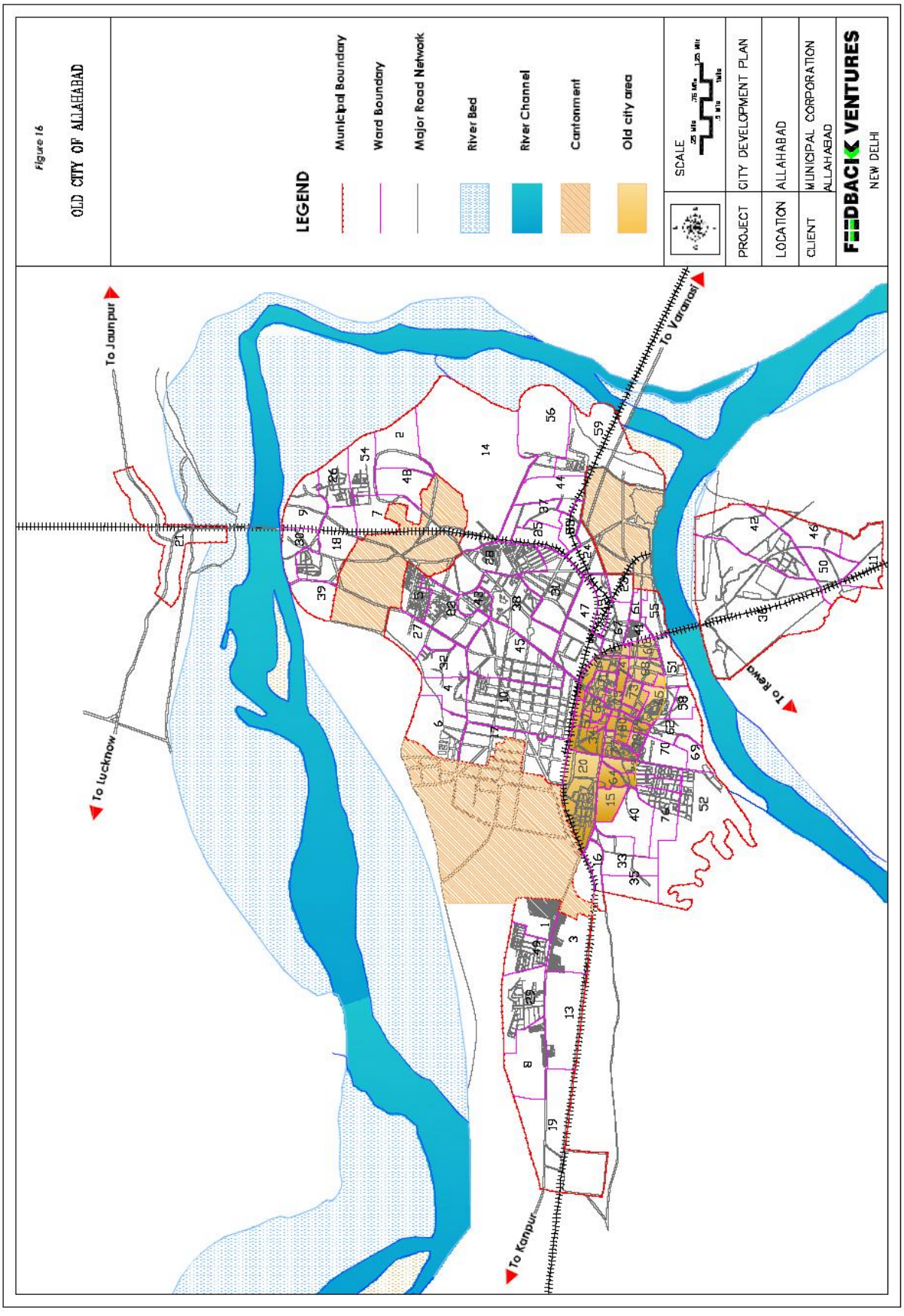


Figure 16
OLD CITY OF ALLAHABAD
LEGEND
Municipal Boundary
Ward Boundary
Major Road Network
River Bed
River Channel
Containment
Old city area
SCALE
PROJECT
CITY DEVELOPMENT PLAN
LOCATION
ALLAHABAD
CLIENT
MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
To Jaunpur
To Varanasi
To Lucknow
To Rewa
To Kanpur

5.0 City Development and Land Use

5.1 Introduction

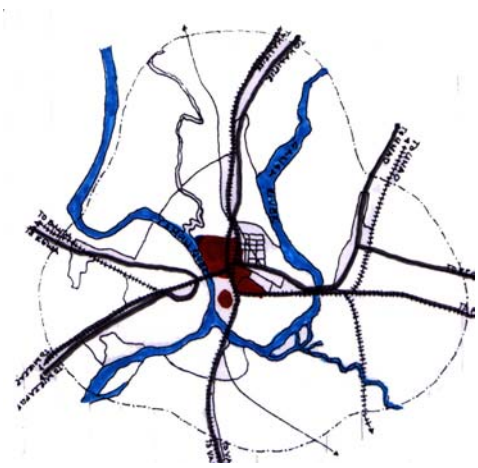
Its sanctity is manifest by references to it in Purans, the Ramayan and the Mahabharata. According to Hindu Mythology, Lord Brahma, the creator God of the Trinity chose a land on earth (ie Prayag) to perform *Prakrista Yag* at the beginning of the creation and he also referred to it as *Tirth raj* or the King of all pilgrimage centres. As per writing of 'Padam Puran' – "As the sun is amongst the moon and the moon amongst the stars, likewise 'Prayag is best amongst all places of pilgrimage"

The bathing at Prayag is mentioned in Brahma Puran's – "in the month of Magha at the banks of Ganga-Yamuna in Prayag bestows results of millions and millions of Ashvmedha Yagna". Prayag is the birthplace of Som, Varuna and Prjapati. Prayag has been associated with mythological personalities in Brahmanical (Vedic) and Buddhist Literatures. It was the seat of the great sage Bhardwaj, sage Durvasa and sage Pannas. Sage Bhardwaj lived here circa 5000 BC and taught more than 10000 disciples. He was the greatest philosopher of the ancient world.

The earliest monument of antiques, the Ashok Pillar, has inscriptions of third century BC – the inscriptions of his directions to his fellow rajas and praise of King Samudragupta. The Chinese traveller Huan Tsang in 643 BC found Prayag inhabited by many Hindus who regarded the place very Holy.

5.2 Morphological Development of the City

5.2.1 Mughal Period



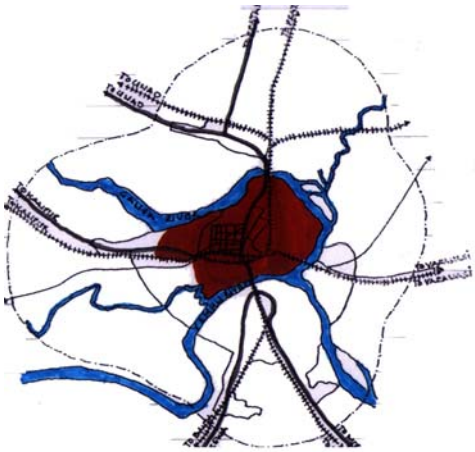
The great Mughal Emperor Akbar founded the city in 1575 AD by the name of ILLAHABAS meaning "The City of Allah". Acknowledging the immense navigational potential of its rivers and the entrepreneurial importance of the city as a centre for boat making, Akbar built a magnificent fort overlooking the quiet flowing Yamuna. In medieval India the city enjoyed the honour of being the religio-cultural centre of India. For a long time it was the provincial capital of the Mughals. Later Marathas captured it. On the south-western extreme of Allahabad lies Khusrobagh that antedates the fort and has three mausoleums including that of Jehangir's first wife Shah Begum.

5.2.2 British Period

The British History of the city began in the year 1801 AD when the Nawab of Oudh ceded it to the British Throne. The British army used the fort for their military purposes. The town was the centre of war of Independence (1857 AD) and later became the crucible of Indian Freedom Movement against the British.

The East India Company officially handed over India to British Government

here at Minto Park in 1858 AD. After the first war of independence the town was named Allahabad and was made the capital of United Province of Agra and Oudh. In 1868 AD, it became a seat of Justice when Allahabad High Court was established.



British architect Sir William Emerson erected a majestic monument All Saint Cathedral in 1871 AD, thirty years before he designed the Victoria Memorial in Kolkata. To be set up in 1887 AD Allahabad is the fourth oldest University. Allahabad has been rich in numerous Victorian and Georgian buildings made in synthesis with Indian architectural traditions.

1900 AD onwards, the Home Rule League became very active in Allahabad drawing into its fold some of the future leaders of modern India like Jawaharlal Nehru. With the advent of Mahatma Gandhi, Anand Bhawan, the home of the Nehrus became the epicentre for major political upheavals that were being planned in the country. The transformation of freedom struggle into a mass movement in 1920s made Allahabad a centre of political pilgrimage as well.

5.2.3 Over the Past Decades

Illustrated herein this section are two satellite images depicting the situation of urban sprawl in the years 1994 and 2000 respectively. There is marked increase in urban activity (settlements, red in colour) over the years. There is marked increase in the main city of Allahabad so is with Naini and Phaphamau which appeared as a small group of houses in 1994, but started spreading outwards and forming a sort of continuum towards the main city by 2000.

Figure 14: Urban Sprawl in 1994

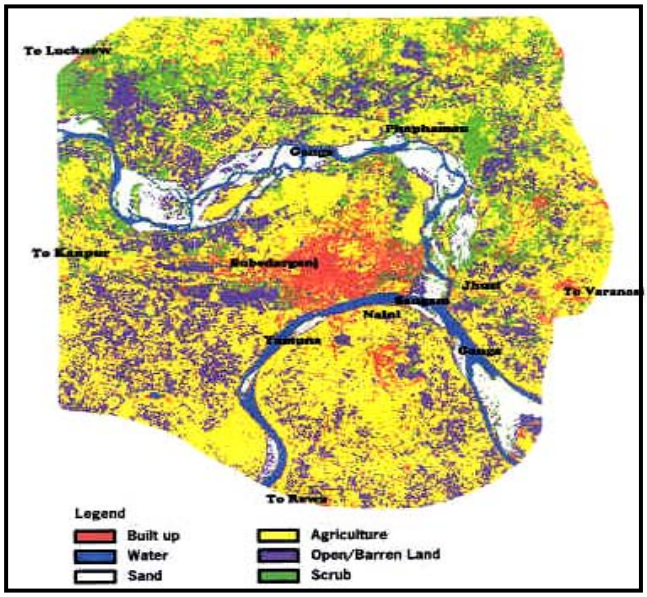
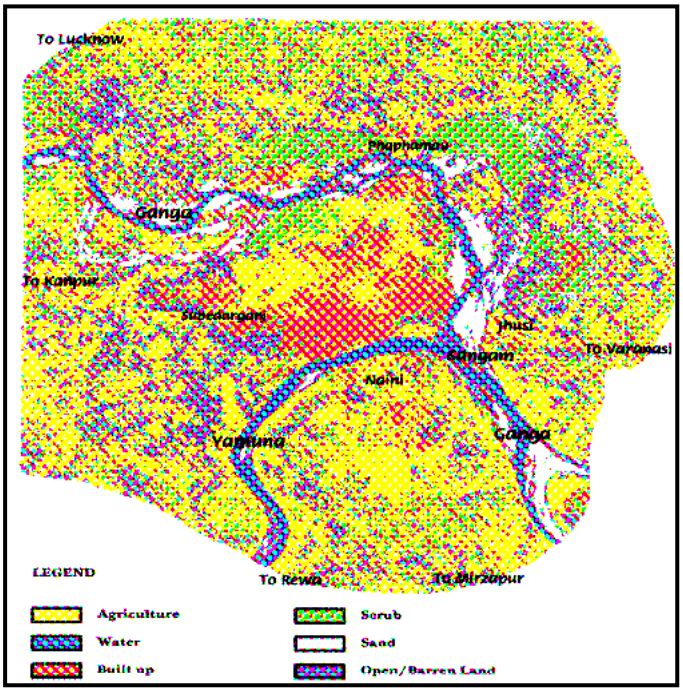


Figure 15: Urban Sprawl in 2000



5.2.4 The City On Date

The existing urban setting and growth trends of Allahabad can be classified into three main categories:

- The Old City consisting of Chowk, Ghantaghar, Bans Mandi, Katghar, Kotwali, Gaughat etc. This shall also include certain areas, though not contiguous but with similar character, like Daraganj, Bairhana, and Katra;
- The New City (conceived during British rule and thereafter) – This includes Civil Lines, Mumford Ganj, Ashok Nagar, Cantonment; and
- The OG areas (satellite towns and ribbon developments) along major corridors including Phaphamau, Jhunsi, Naini, Bamrauli, Manauri etc.

The old city is the economic centre of the city (*Figure 16*). Major arterial roads are wide and suggest a some little application of Urban Planning in the past but the secondary roads and physical development along these has been fundamentally organic. The characteristic features of the old city are as follows:

i) High density;
ii) Major roads are being used as transport corridors as well as bazaar streets;
iii) Congestion, dead-slow traffic speed and utter chaos are the definitive features.
iv) Lack of proper parking lots, haphazard parking on streets, traffic bottlenecks;
v) Major concentration of business – at least 70% of retail and wholesale business is conducted in this area;
vi) Needs major intervention in terms of services and provision of parking lest it will choke itself;
vii) Major entertainment centres (At least 8-10 Cinema Halls are

situated here) are in quite a shabby condition;

viii) Encroachment, by in the form of temporary and permanent structures, is a major problem;

ix) The major Trading Zone – Muththi-ganj lies in this area (proposed for shifting to Transport Nagar;

x) Absence of decent commercial structures. The buildings are old and stinking;

xi) The skyline is greatly dominated by wires of all kinds and specifications. The electricity cables, satellite TV cables, telecom wires, and their respective poles, transformers etc are haphazardly located/ laid without proper planning and consideration of safety aspects;

xii) Most of the small scale industries like furniture, clothing, sweets, and food materials are situated in this area;

xiii) The hardware market, timber market, and furniture market are misappropriately located;

xiv) The Zero Road bus station is a nuisance and creates traffic jams;

xv) Khusru Bagh, a monument with significant green space is ill-maintained and unsafe for ladies and children.

A major portion of Allahabad inside the two rivers is planned. The civil lines area is one of the oldest cities planned by British rulers in India. It is planned on a grid-iron road pattern with additional diagonal roads which makes it an efficient city. The site is well drained and wide tree lined avenues provide easy and shaded thoroughfare which is not example in India. The distinguishing characteristics of the new city are as follows:

i) Low density development;

ii) Wide roads – major arterial roads are wide (good ROW) with ample space for future widening;

iii) Generally well drained. Only a few areas like Allahpur are low lying and are faced with water logging problem;

iv) The usual condition of drains and big *nallas* is bad. Major improvement/ augmentation is required;

v) Underground sewer-line is absent and needs be provided;

vi) Pedestrian pathway is non-existent in majority of the area;

vii) Company Bagh and the cantonment areas – New Cantonment, and Old Cantonment act as green belt but roadside vegetation needs be strengthened;

viii) Major educational institutions and offices are located here – Collectorate, Railways office, University, High Court, AG office, ADA, MCA, MNNIT etc;

ix) Civil lines and Katra are the two main business areas and are highly specialised. While Civil Lines is hip and posh, Katra is economical yet trendy, mainly catering to students' community;

x) Parking and encroachment is a big problem at all important places;

xi) Growth is rapid in terms of construction activities but majority construction is either illegal or openly flouting/ defying the norms. Multi-storied construction of apartments are most popular with private builders;

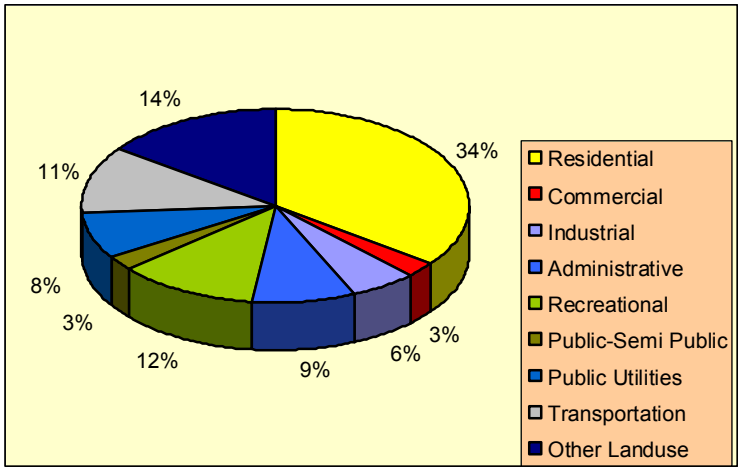
xii) The land prices are abnormally high in the new city, and exceptionally high in the Civil Lines and adjoining areas. The reason is short supply of land within the river area and non availability of well developed and well connected land/ plots in the satellite towns;
xiii) The streetlights are few, insufficient, and call for a major revival;
xiv) Unsatisfactory public transportation. Majority of people either rely on personal vehicles or rickshaws;
xv) Dependence on personal vehicles is major cause of pollution;
xvi) The biggest problem is passage of heavy vehicles throughout the city;
xvii) Improper placing of electric poles and transformers is a constant feature throughout the city;
xviii) Ill managed parks/ absence of amusement centres;
xix) Sangam lies in this area;
xx) Pollution of rivers is a big problem. A majority of untreated sewage water is directly dumped into the two sacred rivers.

Allahabad is well placed on Indian road map. GT road (NH-2) passes through it. Rewa road (NH-27) is a major arterial link for cement industries and grain trade of UP and MP. Mirzapur road (SH-44) and Lucknow road are also important. There is mushrooming of ribbon development along NHs and SHs in the city. This organic development can and shall be given direction by planning for development of satellite townships. The demand for basic civic amenities is pronounced. Provision of developed land with added attraction like extension campus of the Allahabad University, High Court, and city centres can steer the growth in these areas. These can be made accessible by ring roads, and an efficient public transportation system.

5.3 Land Utilisation

The growth of Allahabad is clearly marked by the Master Plan. Land use is one of the most important components of any Master Plan which streamlines the pattern/ direction of city growth. This section is aimed at analysing and discussing the land use of the city.

Figure 17: Distribution of Land Use in 2001



Source: Allahabad Master Plan 2021

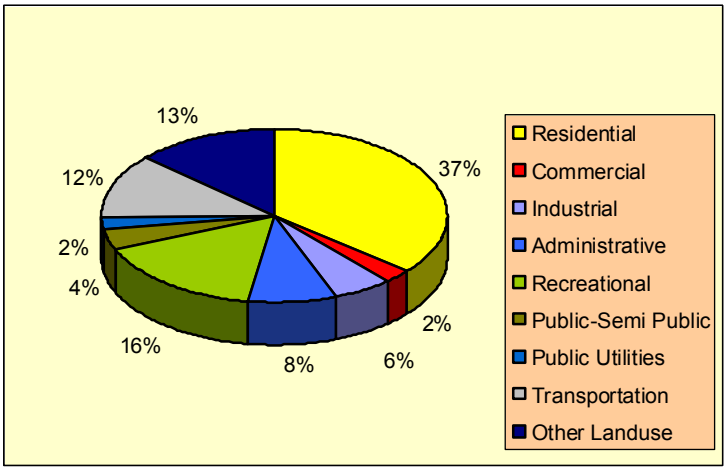
The current Master Plan for Allahabad (2001-2021) covers 21689.13 ha of land under different categories of land uses (*Table 15; Figure 17*); maximum portion of land is utilized for residential purposes accounting for 35.14% of the total area. There is a high proportion of land under 'other' land uses (14.91%) which includes area under green belt, forest, cremation ground and dairy farm. The recreational land use covers a significant portion of land use (16.02%) which is due to inclusion of ground for Kumbha mela as part of recreational area. Area under transportation land use is 11.67% of the total.

Table 15: Land Use Break-Up

Sl. No.	Land use	Area Covered (2021)	Area Covered 2021 (%)	Area Covered (2001)	Area Covered 2001 (%)
1	Residential	11164.48	36.11	7622.24	35.14
2	Commercial	746.2	2.41	545.43	2.51
3	Industrial	1722.89	5.57	1217.81	5.61
4	Administrative	2624.5	8.49	1871.09	8.63
5	Recreational	4953.45	16.02	2531.48	11.67
6	Public/ Semi Public	1179.78	3.82	571.24	2.63
7	Public Utilities	690.05	2.23	1660.53	7.66
8	Transportation	3736.3	12.09	2434.8	11.23
9	Other Land uses	4099.73	13.26	3234.51	14.91
10	**Total**	**30917.38**	**100**	**21689.13**	**100.00**

Source: Allahabad Master Plan 2021

Figure 18: Distribution of Land Use in 2021



Source: Allahabad Master Plan 2021

5.3.1 Commercial Land Use

A commercial centre or a market area is an area of demand including the existing or potential buyers of goods and services within a well-defined geographical area. It has been observed that the commercial centres have acted as a podium for interaction between the various segments of the society irrespective of caste, class and creed, helping the common man to under stand the life of various communities and also reflecting the economic and social traditions of the peoples. The spatial pattern of commercial activities within the

city of Allahabad elucidate the predominance of the concentration of the largest and the most important business establishments in the core area or the central business district comprising of Chowk and the arterial road between Chowk and Johnstonganj, where the pulse of the business beats vehemently. Within the vestigial parts of the city there are several nuclei where retail activities. Each of these nuclei differes from the other. The various commercial centres of the city have also been affected by historical circumstances, including the planning process, influence of individual commercial establishment on its rival and the consumers it serves. Allahabad's commercial centre, like all the other KAVAL towns, except for Kanpur, is comparatively old and has undergone various shaping processes through accretion and expansions. These forces, both centripetal and centrifugal, have left their imprints on its form and functions. It is the form of the commercial centres as explained by function that has enabled the understanding of the present spatial retailing system, the irregularities in the hierarchal nesting of shopping areas manifested within the city area. The present existing pattern of the shopping area is the direct consequence of successive changes that have occurred in the retailing functional land use.

With increasing population and construction of arteries, Allahabad's commercial structure could not maintain its physical coherence around the old city core, instead it witnessed a haphazard expansion towards north-east, where the University formed the main attracting nucleus (Katra), north west where the commercial centre was established for the Britishers alone (Civil Lines), to the north across the Ganga (Phaphamau) and to the southern corner of the city across Yamuna (Naini). In fact the Naini commercial centre was designed to develop as an industrial nucleus, but it failed to keep expectations in providing an industrial base to the city's economy and is at best a neighbourhood shopping area.

While the Master Plan 1991 classified the commercial centres of the city into three broad types – (i) CBD comprising Chowk, Khuldabad, Muthiganj, Kydganj, Bansmandi, Johnstonganj and Gaughat; (ii) Sub-central Business Districts comprising Civil Lines, Katra, Colonelganj and Daraganj; and (iii) Local markets comprising of Bairana, Rajapur, Sulaim Sarai, Bamhrauli, Phaphamau and Naini. An analysis into the distribution of various business units and the intensity levels, the following classification may define the business areas of the city at large –

1. CBD with highest order of business;
2. Sub-CBD with medium order business;
3. Neighbourhood business centres at local level; and
4. Open to air weekly markets.

5.4 Review of Master Plan 2021

Table 16 shows stocktaking done at the time of preparation of the current Master Plan 2021. The prevailing situation in 2002 differed significantly from the predictions/ proposed situation in the Master Plan 2001.

Figures 19-20 below show comparative situation of land uses (major and other) as per the proposals of the previous Master Plan and the ones that

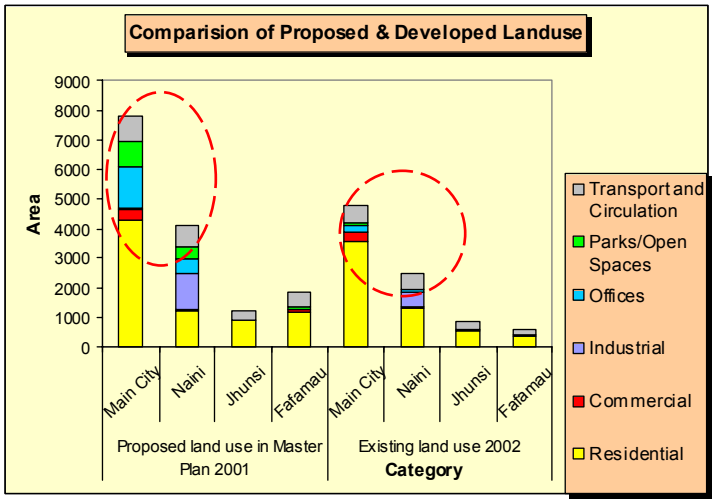
existed on ground in 2002. There is marked variation between the two which goes to infer that the urban development did not follow the vision and growth patterns anticipated in the Master plan.

Table 16: Stocktaking of Land Use Scenario

Sl. No.	Land Use	Proposed land use in Master Plan 2001 Area (Ha)				Existing land use 2002 Area (Ha)			
		Main City	Naini	Jhusi	Phaphamau	Main City	Naini	Jhusi	Phaphamau
1	Residential	4307.99	1204.1	909.24	1200.91	3580.41	1341.65	561	348.46
2	Commercial	367.01	95	15	68.42	292.96	40.7	25	35.02
3	Industrial	35.89	1181.92	--	--	26.6	436.2	20	--
4	Offices	1384.09	487	--	--	174.38	126.5	9	5.56
5	Parks/ Open Spaces	844.92	388.48	14	90	140.14	--	--	--
6	Kumbha Mela	372.00	--	549.08	--	--	--	--	--
7	Cultural and Religious places	--	69	--	--	19	--	--	--
8	Public/Semi public facilities	387.32	119.42	55	9.5	350.45	205.14	35	17.25
9	Public utilities and facilities	42.00	1363.2	93.68	161.65	23.25	16.12	--	--
10	Transport and Circulation	900.20	752.98	301.24	480.38	577.4	541.1	258.2	212.06
11	Others	1298.15	829.16	638.76	468.84	--	--	--	--
12	**Total**	**9939.57**	**6490.26**	**2576**	**2479.7**	**5184.59**	**2707.41**	**908.2**	**618.35**

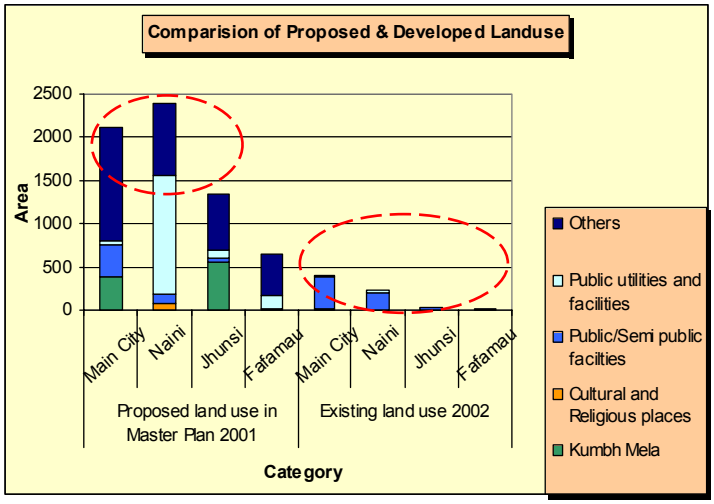
Source: Allahabad Master Plan 2021

Figure 19: Comparison of Major Land Uses



Source: Allahabad Master Plan 2021

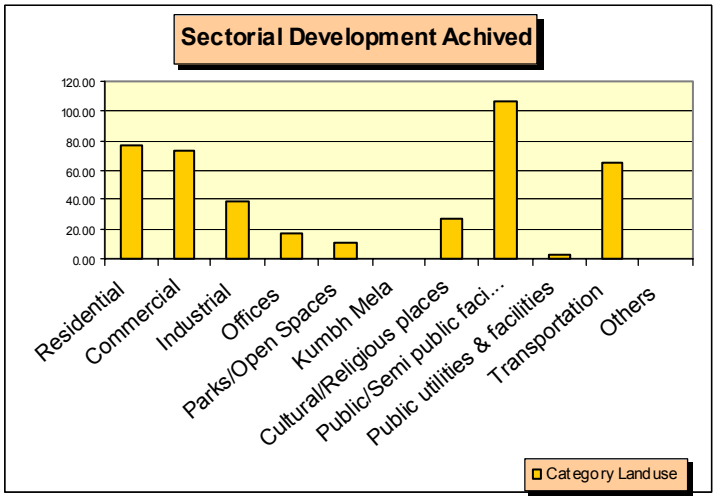
Figure 20: Comparison of Other Land Uses



Source: Allahabad Master Plan 2021

Area for residential use was 7622.24 ha but the actual development was around 5831.52 ha in 2002 which is 24% short of the proposed target. Lack of focus on developing Public utilities and facilities can also be observed, only 2.37% of the proposed area could be developed by 2002. Similar is the situation as regards parks and open spaces where only 10.28% (140.14 ha) of land was developed as against the proposed 1337.40 ha (*Figure 21*).

Figure 21: Land Use Targets Vs Achievements



Source: Allahabad Master Plan 2021

5.5 Key Issues

- The experience suggests that the anticipated development patterns envisioned in the Mater Plan are partly achievable or at times misdirected. Non-performance or non-achievement in the industrial and/ or commerce sectors may often lead to unforeseeable and unanticipated results;
- The city centre (old city) is too crowded with huge economic activity, unorganised parking, illegal enchroachments; and
- Wholesale and few other activities need be shifted.

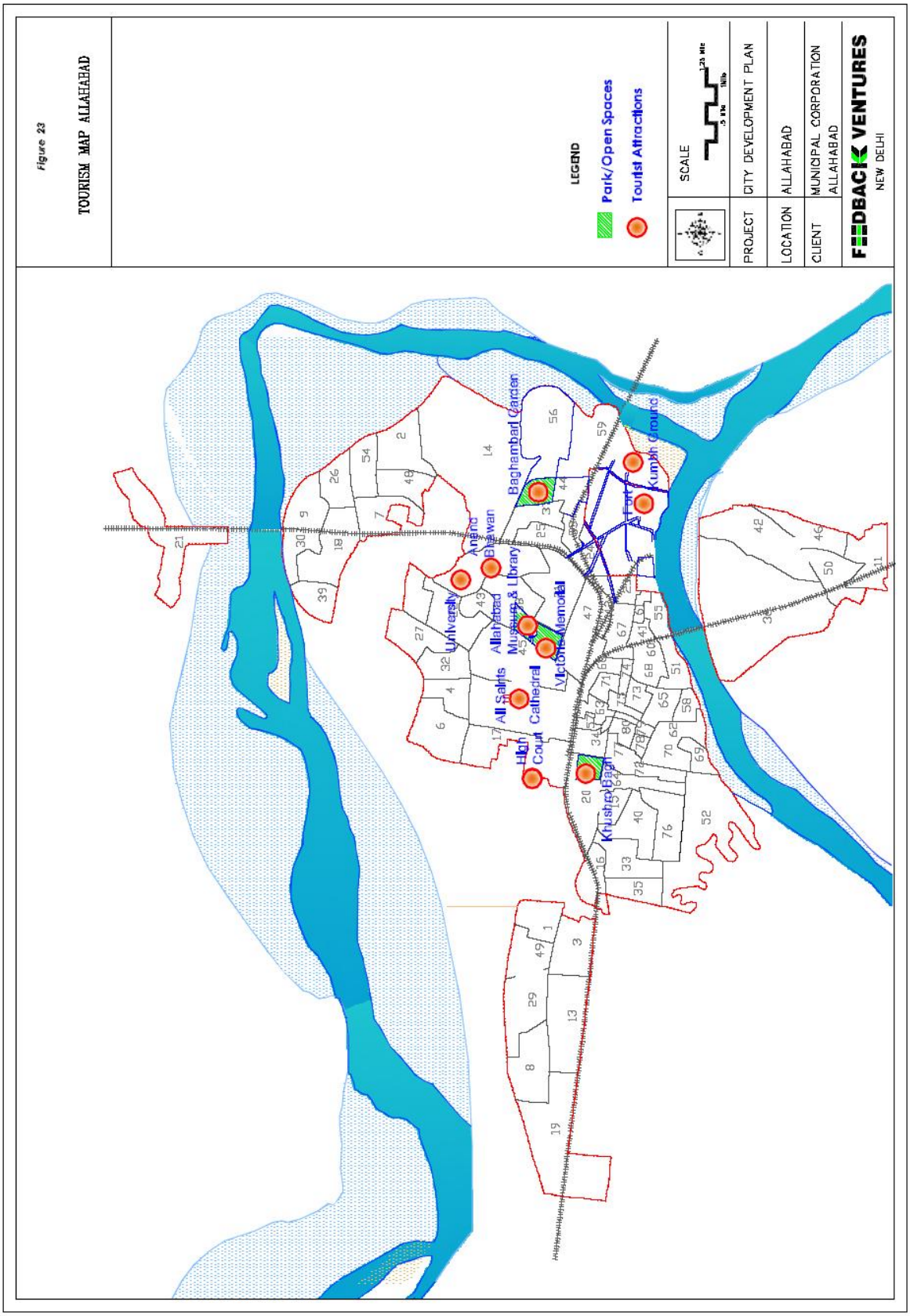


Figure 23
TOURISM MAP ALLAHABAD
LEGEND
Park/Open Spaces
Tourist Attractions
SCALE
PROJECT CITY DEVELOPMENT PLAN
LOCATION ALLAHABAD
CLIENT MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
Anand Bhawan
Baghambari Garden
Kumbh Ground
University
Allahabad Museum & Library
Victoria Memorial
All Saints Cathedral
High Court
Khusro Bagh

6.0 Tourism and Heritage Conservation

6.1 Introduction

Allahabad had a rich history. This city finds mention in ancient Hindu scriptures including *Ramayana* and *Mahabharata*. Sangam, the unique confluence of the three rivers Ganga, Yamuna and mythological Saraswati (it is believed) is also the place where *Amrit* (nectar of Immortality) fell after the fight of Gods and demons. This place is considered sacred and every twelfth year a great mass of humanity (3.0 crores in a period of 1 month in 2001) pours in to have a holy dip. This Gigantic congregation/ festival falls in the month of January and February. But every year mini *Kumbha* – the *magh mela* is hosted on the same venue.

Tourism has emerged as on of the fastest growing sector/ industry in the world economy. UP state has made its place on the world tourist map as one of the important tourist destinations due to its heritage and regional value. Places *inter alia*, Agra, Allahabad, Varanasi, and Mathura have attracted great number of tourists over the past few years. In year 2003 around 8 Crore tourists visited the state which is significant. Allahabad has witnessed around 5.3 Crore tourists in the last 5 years (*Table 17; Figure 22*). Average tourist arrival in Allahabad contains 15-20% of total tourist arrival in UP, Figures are self explanatory that Allahabad is one of the most potential places in UP to develop as tourist city.

6.2 Tourist & Recreational Destinations

The city has evolved in last 2000 years but negligence in maintenance has depleted the tourist attractions. Even then the city has a few marvellous structures that are important from tourism point of view and have the potential to pull a significant amount of crowd. Major tourist destinations in the city (*Figure 23*) include Forts, Ghats, Sangam, Temples, Heritage sites built at various times. Some of the major tourist destinations in the city are discussed in the ongoing section.

6.2.1 Akbar Fort

Great Moghul king Akbar built a massive fort on the Sangam, the confluence of Ganga and Yamuna. It presents a majestic view and is comparable to red forts of Agra and delhi in size, form and architectural detailing. But presently this has been occupied by Army and is not open for general public and tourists. It is recommended to hand this fort to ASI for maintenance and upkeep and shall be opened for tourists.

6.2.2 Sangam

It is already the major tourist attraction (mainly religious tourist). The spot is highly undeveloped and lacks basic facilities. Tourists are left on the mercy of boatmen and *pujaries* who greatly harass the tourists. This spot has huge potential and needs an integrated development plan to reduce the continuous outflow of cash in the name of *Kumbha* expenses every 12 years when it hosts the *Kumbh mela*.

6.2.3 King Ashoka's Pillar

This gigantic Ashoka pillar, of polished sandstone stands 10.6 m high, dating back to 232 B.C. The pillar has several edicts and a Persian inscription of Emperor Jahangir inscripted on it, commemorating his accession to the throne. It is one of the oldest archaeological evidence of Allahabad's importance. This is situated inside the Akbar Fort. It is not open for general public as the fort is under the army control.

6.2.4 Samudrakoop & Ulta Quila

This is lying on the eastern Sangam Bank on a high mound. The Samudrakoop has been mentioned in *puranas* and *artefacts*. While the Ulta quila is believed to be the inspiration of the famous writer *Bhartendu Harishchandra's* novel Andher Nagari Chaupat Raja. The site has potential and the Tourism Department has submitted proposal for its development. If handled properly this could be a great tourist attraction.

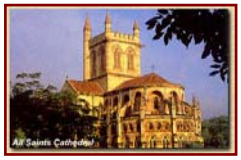
6.2.5 Allahabad University

The Senate Hall, administrative building and the Science Faculty (Vijai Nagaram Hall) are excellent examples of English Colonial architecture. Around 100 years old, these buildings present a magnificent view of detailing and craftsmanship in Yellow Sand stone. But there is a senseless and insensitive approach is being adopted in its maintenance. A few years back some body got it painted in light pink hiding the beautiful natural sandstone colour. This is crime. Therefore it is advisable that the maintenance of the old buildings of University be given to ASI.

6.2.6 High Court

This is another landmark of the city that has similar architectural detailing like University. Initially the court has been designed for a limited number of people and cases. But today the load has increased more than 100 folds. And the interior of the building smells. Parking is a huge problem and there is hardly any system of storage of documents. The general scenario is chaotic baring the marble hall area where chief Justice and other judges have their cabins.

6.2.7 All Saints Cathedral



Designed by great English Architect William Emerson who also designed Victoria Memorial of Calcutta, this cathedral is undoubtedly the most beautiful building of this city. Located in civil Lines, within a big roundabout, on the crossing of MG road and SN road, this cathedral has exquisite carving on sand stone. The stones in two colors have been used. The mass is erected in light yellow and the defining boundaries are etched in dark pink. The interior is more beautiful than exterior with high ceilings and stone gothic arches. This is more beautiful than St. Francis church of Goa.

6.2.8 Anand Bhawan

This building had been the centrestage of the Indian freedom Struggle. The house of Pt. Moti Lal Nehru is a national monument and is a great tourist attraction. Anand Bhawan now houses one of the finest museums of India and a memorabilia of the Nehru-Gandhi family.

6.2.9 Khusro Bagh

This mausoleum of Prince Khusro, the son of Shahjahan has all the ingredients of the traditional moghul architecture. It has grandiose, scale, craftsmanship and setting in garden. Situated within ½ km of Allahabad railway station, it is one of the least visited tourist spots of the city. Despite the fact that ASI has the charge for its maintenance, it remains to poorly maintained monument with historical relevance.

6.2.10 Public Library & Company Bagh

The city has a beautiful building designed to act as legislative assembly of *Sanyukt* Pradesh in English rule. Today this building has been converted into a public library. The Gothic architectural style and the amazing craftsmanship in stone is marvellous. This shall be a must on every tourist itinerary. Some additions of basic facilities can work wonders.

6.2.11 New Naini Bridge

The newly constructed Naini Bridge is a cable stay concrete bridge. This is the second bridge of its kind in India and is an engineering marvel. The slender frame is an ethereal appeal that mesmerizes everybody.

6.2.12 Chandra Shekhar Azad Memorial

The spot where great freedom fighter Chandra Shekhar Azad has fought his last battle with English Soldiers and lost his life has recently been beautified. Today this presents a refreshing view and attracts people. This is a commendable step and this initiative shall be replicated throughout the city in spirit and execution.

6.2.13 Amusement Park/ Recreational Area

The city has no amusement park or recreational area (although there are several parks in the city) worth mentioning. The Company Bagh is ill maintained and uninviting. This can be given a facelift.

6.2.14 Eateries & Food Joints

The old city has some famous eating joints. Loknath, Sulaki, Bhagwandas, Hari Ram and many others offer mouth watering dishes and sweets. Their gastronomic delights could be a crowd puller if we ensure their easy accessibility.

6.2.15 Allahabad Museum

The central museum is located in Company Bagh, within the heart of the city, easily accessible and has an invaluable treasure of statues and other artefacts of bygone eras. The key attractions of the Allahabad Museum are the paintings of Nicholas Roerich, Rajasthani miniatures, terracotta figurines, coins and stone sculptures from the 2nd century BC to modern times.

6.3 Tourist Arrivals

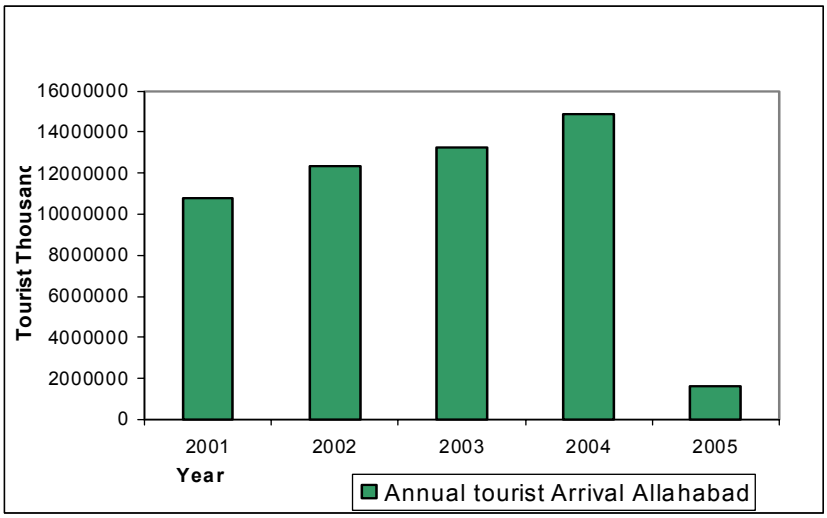
Allahabad has a wide range of tourist arrival throughout the year. Arrival of both domestic and foreign tourist is on the increasing trend, however this trend is not constant through the year major tourist arrives in the time of *mela*, considering the average around 50-100 foreign tourists and about 4200 domestic tourists arrive per day in Allahabad. Number of tourist considerably increases at the time of *Khumbh mela*. The city is stressed in this period and there is a huge demand on the available infrastructural facilities.

Table 17: Annual Tourist Arrival in Allahabad

Sl. No.	Year	Domestic	Foreign
1	2001	10795159	8055
2	2002	12320776	9351
3	2003	13285609	10347
4	2004	14913020	14631
5	2005	1640322	16094

Source: Department of Tourism, Allahabad.

Figure 22: Tourist Arrival in Allahabad



Source: Department of Tourism, Allahabad.

6.4 Employment Potential

Tourism is among the fastest growing industries across the world and currently accounts for over 6.5% of the world employment base. Tourism is highly labour intensive industry as compared to any other industry. Allahabad has huge potential for tourism activity – religion-based and institution-based tourism in particular. The *Kumbh mela* is the greatest of north Indian festival-fairs and it has exerted a mesmerising influence over the minds and the imagination of the ordinary Indian from times immemorial.

Table 18: Employment Generation

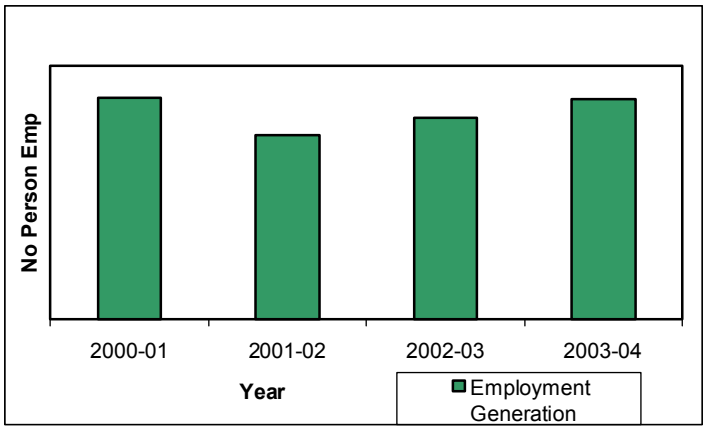
Year	No of Jobs
2003-04	13,911
2002-03	12,671
2001-02	11,621
2000-01	14,001

Source: Department of Tourism, Allahabad

The Economic and Social Commission for Asia and Pacific (ESCAP) study report on 'Economic Impact of Tourism in India' reveals that 1.2 international tourist visits provide employment to one person while 17 domestic tourists generate employment for one person. Further, there is an employment multiplier as 1.358 (Refer report by Dr G Raveendran on Tourism, Planning and Measurement Methods, 1993) that helps creates indirect employment.

Table 18 and *Figure 24* depict employment generation scenario over the past few years in Allahabad as a result of tourism.

Figure 24: Employment Generation



Source: Department of Tourism, Allahabad

6.5 Key Issues

There are several pertinent issues pertaining to heritage and tourist destinations in Allahabad. These are discussed in *Table 19* below.

Table 19: Pertinent Issues

Tourist Site	Issues
Sangam	➢ The spot is highly undeveloped and lacks basic facilities. ➢ Tourists are left on the mercy of boatmen and *pujaries* who greatly harass the tourists. ➢ This spot has huge potential and needs an Integrated Sangam Area Development Master Plan (ISADM) to reduce the continuous outflow of the cash from state exchequer in the name of Kumbha Expenses.
King Ashok's Pillar	➢ This is an invaluable piece and can be huge tourist attraction with fort and Sangam ➢ Not open for general public as the fort is under the army control.

Allahabad High Court	➢ We shall preserve this monument of justice for this immediate efforts need to be undertaken. ➢ Zoning regulation should be followed in its surrounding. ➢ Extension of High court complex should be planned and be shifted to some satellite town preferably Phaphamau on Lucknow road ➢ Major cases shall be shifted there, and only high profile (maybe only government related cases be entertained here). This will significantly reduce the load and the life of this architectural masterpiece can be extended.
Khusro Bagh:	➢ With ill maintenance, uninviting entrance without basic tourist facilities. All this happens in spite of ASI having the charge for maintenance.
All Saints Cathedral	➢ Maintenance is not up to the mark and black weather marks are prevalent. ➢ For its proper upkeep and prolonged life, ASI shall acquire it.
Anand Bhawan	➢ Facilities are not satisfactory. ➢ The complex shall be given a facelift and this zone shall be developed according to a sensitive plan. ➢ Some more facility like Sound & light shows can be organised, to attract more tourists.
Public Library and Company Bagh:	➢ Better tourist facility should be developed over here. ➢ Some light shows or walkthrough should be provided to attract more local and other tourist.

7.0 Water Supply

7.1 Introduction

Many cities in India are bursting to the seams, due to the rise in population and heavy influx of people from villages to cities. For example, 40 years ago Allahabad had a population of about 3 lakhs whereas it currently has a population of over 12 lakhs. The problem is that the infrastructure (water, electric supply, roads, drainage, sewers, etc.) has not improved or increased at the same rate as the increase in the population. Consequently, residents of cities are faced with the regular nightmare of lack of water and electricity, bad roads etc. With respect to problems concerning civic discipline, mushrooming of unauthorized constructions and unorganised economic activities impact upon the economic development of a city and the investment climate.

7.2 Present Scenario

7.2.1 Sources of Water Supply

While the JN is responsible for planning and execution of schemes for provision of safe and potable drinking water to the public, O&M is looked after by the JS. 217 MLD water is being supplied daily in the MCA limits for meeting out the demand of both domestic as well as industrial sectors.

Table 20: Water Works At A Glance 2006

Sl. No.	Features	Details
1.	Area covered by JS	85.00 km^2
2.	Population served	12.60 lakh
3.	Per capita supply	200 lpcd
4.	Total demand (all uses, floating population & losses)	267 mld
5.	Surface water supply (Yamuna River)	80 mld
6.	Capacity of water treatment plant	135 mld
7.	Tube wells – 157 no	157 mld
8.	Mini tube wells – 216 no	
9.	Total length of network	1118.87 km
10.	Total number of Stand Posts	4550 no
11.	Total number of house connections	1,48,000
12.	Total number of consumers	1,16,954
13.	Total number of non-domestic consumers	1800 no
14.	Total number of zoning pumping station (4.8 mld)	3 no
15.	Number of parks	117 no
16.	Urinal and Charhi	61 no
17.	Sulabh public toilets	61
18.	Fire hydrants	412 no

Source:JS, 2006

Major portion of water supply is being fulfilled by the underground water source by providing tube wells, mini tube well and hand pumps. The 157

numbers of municipal tube wells, 216 numbers of mini municipal tube wells, and 2448 numbers of municipal hand pumps are satisfying 137 MLD water demand of the city. The private hand pumps and tube wells are satisfying the 54 MLD water demand of the city, which is not in the records of JS and JN. *Table 20* details out the water works for Allahabad municipal area.

It has also been estimated that the intake of water from Yamuna River in 2003 was 80 MLD whereas the remaining 137 MLD water drawn from 157 deep tube wells operated by the JS (*Table 21)*. The quality of water is reported to be of acceptable standard.

Table 21: Total Water Production in 2003

Sl. No.	Source of Supply	Capacity (MLD)
1	Surface water (Yamuna river)	80
2	Tube wells	137
	Total Production	**217**

Source: JICA[11] & JS Reports[12].

The raw water from River Yamuna is being tapped (80 MLD) at Karelibagh raw water pumping station which is pumped to Khusro Bagh water works for treatment before it is supplied to the consumers.

7.2.2 Treatment & Distribution Facilities

The existing condition of the treatment plant is poor. The clarriflocculation unit of the plant, which is one of the main units of the WTP, is not functional. The sedimentation tank is serving the purpose of the clarriflocculation unit. Coagulant is being added in raw water in the raw water channel for the coagulation and sedimentation of suspended solids in the sedimentation tanks. Total capacity of settling tank is 177 MLD. Effluent from the sedimentation tank passes from the filter beds of rapid gravity sand filters. Total filtration capacity of the filter is about 135 MLD. The filtered water is chlorinated by chlorine gas with the help of chlorine toners. The water after filtration and chlorination is stored in the clear water storage tanks. Water from the clear water storage tanks is pumped and served to the community and about 35% of total water being supplied to the city is being fulfilled by this WTP.

Table 22: Water Situation Analysis in 2003

Sl. No.	Description	Detail
1	Total Population in 2003	1049800 nos
2	Total Municipal water production	80+137=217 mld
3	15% losses	180 lpcd
	Net water supply	180 lpcd (say)

Source: Allahabad Master Plan 2021

Based on JN estimates, private supplies account for an additional 20%. The present per capita supply of water is approximately 210 lpcd

7.2.3 Coverage &

Allahabad city has been divided into 12 water supply zones. Out of these 12 zones (*Table 23, Figure 25*), three zones are being served by surface water

Service Levels

source drawn from River Yamuna and two zones are being served by both surface water and ground water sources. The rest seven zones are being fed by underground water/ tube wells.

Table 23: Water Supply Zone in 2005

Sl. No.	Zones	Source of water	Design Supply (lpcd)	Population Served	Water Supplied (MLD)	Remarks
1.	Lukerganj	Surface	150	45600	6.80	Inadequate pressure in water main
2.	Atala	Surface	150	149000	21.85	Sufficient water with faulty management
3.	Khusrobagh	Surface	150	119300	17.51	Poor supply Low pressure
4.	Sulem Sarai	Ground Water	150	152771	22.61	Newly developed
5.	Kydganj	Combined	150	118117	17.34	Poor distribution networks
6.	Daraganj	Ground Water	150	159000	16.07	Pumping plants are old
7.	Civil Lines	Combined	150	67200	9.86	Adequate supply with poor distribution system
8.	Colonganj	Ground Water	150	129700	19.04	Poor level of service, Poor Storage with poor distribution system
9.	Rasoolabad	Ground Water	150	57575	7.82	Lack of distribution network
10	Phaphamau	Ground Water	150	85000	11.90	New alignments are to be planned
11	Naini	Ground Water	150	180000	23.97	Industrial area, Own water supply arrangement
	Water Supply access to the Population			1263263		
	Gross Supply of Water				184.45	
	15% Water Loss				32.55	
	Net Design Supply of Water				217.00	

Water is being served to the community by pumping the water in to the 15 overhead tanks and then by gravity flow and also by direct boosting in to the line by the pumps from the clear water reservoirs and tube wells by providing 4,550 stand posts, 1,16,954 domestic house connections and 1,800 non-domestic water connections. There are three zonal pumping stations. Total length of pipeline is about 1,099 km but details of the line are not known. There is no information available with the concerned department i.e. JS and JN regarding the condition of pipeline, size and length of pipe line, location/ layout of pipe line, and age of pipe line.

In the slum areas and areas where water supply line is not available, deep bore hand pumps (India mark-II) has been installed and the community is getting their water from those hand pumps. There are arrangements of water tankers also to provide water to the community in case of emergency. Total number of tankers available with the department is 19. Out of 19 tankers, 18 tankers are in working condition and one requires repairing.

The supply of water to the consumers is intermittent and spread over a period of 10 hours in three shifts i.e. 6.00 am to 10.00 am, 12.00 noon to 2.00 pm, and 6.00 pm to 10.00 pm[13]. *Table 24* gives details of overhead tanks and zonal pumping stations in Allahabad in 2003.

Table 24: Installed Capacity of Overhead Tanks & Pump Station

Sl. No.	Description	Installed Capacity (MLD)
Underground clear water reservoir at zonal pumping station		
1.	Mayo Hall	2.70
2.	Daraganj	1.80
3.	Bhardwaj	1.35
Over Head Tanks		
1.	Govindpur	1.25
2.	Rasulabad	0.45
3.	Rajapur	1.35
4.	Allapur	2.00
5.	Bai ka Bagh	0.85
6.	Naini	1.50
7.	Kareli -1	0.80
8.	Kareli-2	0.40
9.	Rajrooppur	1.00
10.	Transport Nagar	0.65
11.	Sulem Sarai	0.75
12.	Preeetam Nagar	1.50
13.	Phaphamau	0.65
14.	Avantika Colony ADA Naini	1.50
15.	Kalindipuram	2.00

Source:JS, 2006

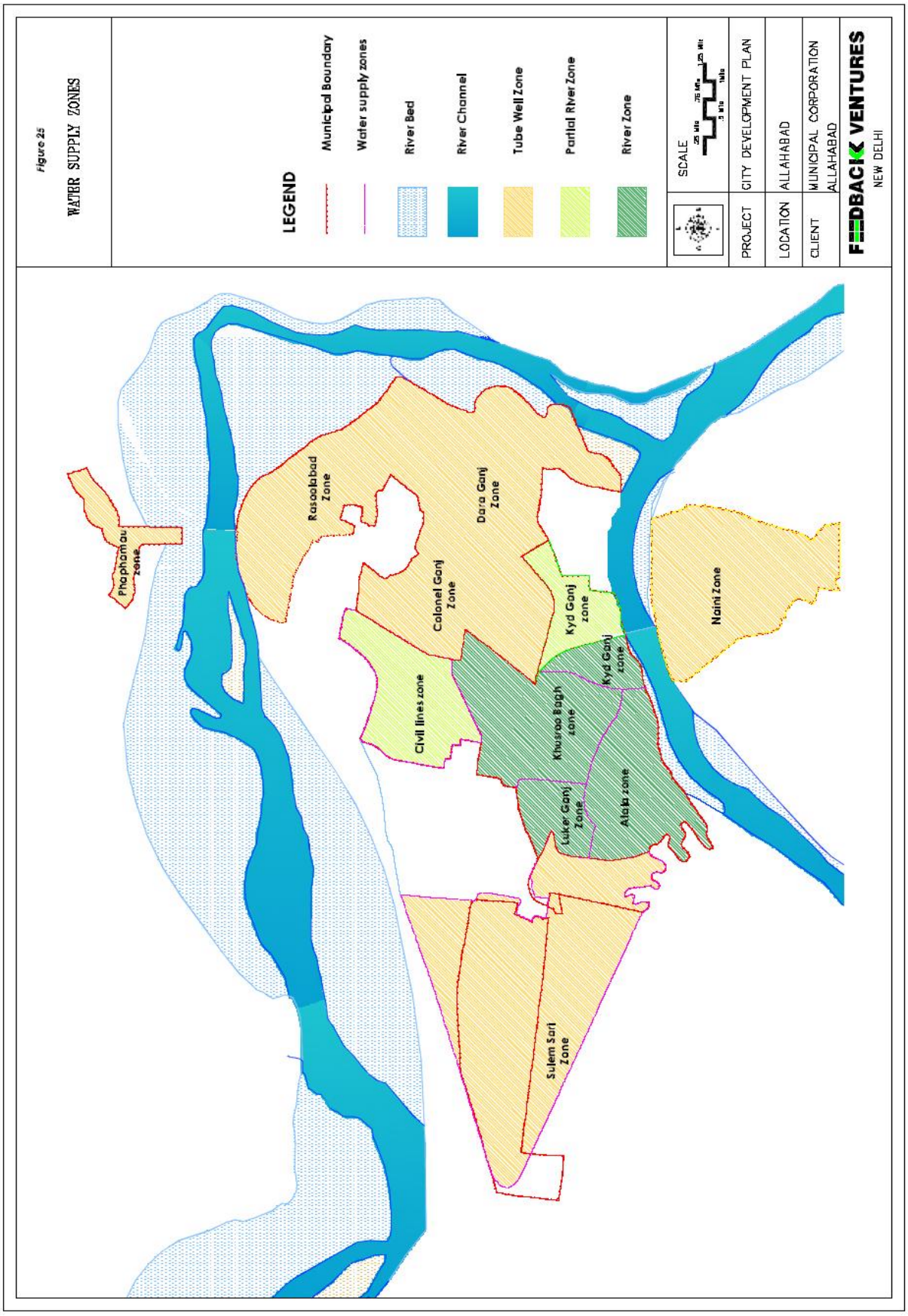


Figure 25
WATER SUPPLY ZONES
LEGEND
Municipal Boundary
Water supply zones
River Bed
River Channel
Tube Well Zone
Partial River Zone
River Zone
SCALE
PROJECT CITY DEVELOPMENT PLAN
LOCATION ALLAHABAD
CLIENT MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
Phaphamau Zone
Rasoolabad Zone
Dara Ganj Zone
Colonel Ganj Zone
Civil lines zone
Kyd Ganj zone
Kyd Ganj zone
Khusro Bagh zone
Luker Ganj Zone
Alaka zone
Naini Zone
Sulem Sarl Zone

7.2.4 Water Demand & Deficit

23% of the total water demand comes from institutional, industrial and floating population.

Allahabad's estimated demand during 2001 stood at 267 mld at the rate of 172.5 lpcd, including 23% of total domestic demand is considered for institutional, commercial, floating population and 15% of water accounts for losses. However, water production was 217 MLD. The production is upgraded under IDA program and the production of water expected in the current year is 391 MLD including the requirements for institutional, commercial purposes, floating population (23%), and the losses (15%). There is a significantly large number of illegal connections which in not in the records of the departments. There are several connections, which do not have taps to regulate the flow and during supply hours, water remains flowing and is as a result wasted.

Notwithstanding the fact that the water production is on the higher side than requirement, supply is made worse due to deficient pipe network, irregular and unequal distribution of supply. The communities who are close to the pumping stations and overhead tanks are getting higher quantity of water with very high pressures as against those staying far from these stations (*Tale 25*). It has been reported by JS representative that the power failure is severe in the city. During the prolonged failure of power supply, the main components of water works like raw water pumping, electromechanical equipments of treatment plant, clear water pumping, tube well pumps etc, go standstill and the entire water supply system gets affected. It has also been observed during the reconnaissance survey of the city that there are leakages in the pipeline and a large quantity of water is lost due to this factor.

Table 25: Water Demand and Deficit

Sl. No	Description	Unit	2001	2006	Remarks
1.	Population	No	12,60,000	14,62,213	➢ Agglomeration Population ➢ Demand includes 23% demand for institutional, industrial and floating population
2.	Water Demand	MLD	267	312	
3.	Water Production	MLD	217	391	
4.	Deficit / Surplus of Water	MLD	(-) 50	(+) 79	

It is largely due to improper and deficient water supply network and poor condition of power supply that water is not available to the community as per estimated production capacity. Water supply system as a whole is not adequate. The poor and deficient system leads to poor level of supply despite good production. A pilot study carried out in a small area, as part of preparation of the Master Plan concluded that no less than 40% water is lost in the system[14]. Considering 40% unaccounted water, net quantity of water being served to the community would be as per *Table 26*.

Reco survey suggests there are leakages in the pipeline causing low pressures & losses.

Total losses in the water supply amount to a whopping 40%.

Table 26: Unaccounted Water and Net Supply

Sl. No.	Description	Detail
1	Total metered water supply	207 lpcd
2	Private supply managed at individual level @ 20%	42 lpcd
3	Total supply	249 lpcd
4	Unaccounted water	40% = 83 lpcd
5	Net supply	166 lpcd
		160 lpcd (say)

Source: JICA & JS Reports

As per the records and estimates, it has been observed that production of water from the various sources is higher than the required quantity of water by the community of the city. But even there are so many areas/ localities where water is not available in sufficient quantity. Such localities are shown in *Table 27*:

Table 27: Water Deficient Localities

Sl. No.	Name of Locality	Ward No
1	Part of Beniganj	4
2	Saidpur near Shastri Nagar	6
3	Koocha, Gangadas, Part of Malviya Nagar,Khusal Parwat,Chak Gangadas	13
4	Part of Bahadurganj and Mutthiganj	14
5	Gujarathi Mohalla	15
6	Atarsuiya	16
7	Unchamandi	17
8	Northern part of civil lines	23
9	Balarampur house	25
10	Allahpur, Alopibagh, Baghambari Housing Scheme	33
11	Sobhatiabagh	34
12	Bairahna Madhwapur	35
13	Krishnanagar and Netanagar	
14	Colonel ganj	
15	Naini	

7.3 Future Requirements

7.3.1 Citizens of Allahabad

In addition to these improvements JN has identified the requirement for new tube wells and storage capacity to meet the projected water demand to 2031. Zone wise domestic water demand is calculated using 150 lpcd. Institutional water demand is added to domestic demand and varies from 20% to 23% of the total demand depending on the number of institutions, schools and hospitals located in the zone. JN has not added any provision for unaccounted for water (UFW) losses to their projections, which in accordance with planning guidelines should be an additional 15%. JN[15] demand estimates are summarized in following *Table 28*.

Table 28: Water Demand Estimates

Year	Population	Demand (MLD)	Planned per capita production (lpcd)	Planned per capita Consumption (lpcd)
2006	1462213	310.25	212	185
2011	1664426	353.15	212	185
2021	2068852	438.96	212	185
2031	2473278	524.77	212	185

Source: JN Estimates & CDP Analysis

7.3.2 Floating Population

Kumbh mela is observed every 12 years while *Ardh Kunbh mela* comes every 6 years. The estimates suggest that around 7-10 crore people throng on the city during the *mela* so as to take a holy bath at the holy *Sangam*.

The *mela* lasts 40-45 days during winters (January 13 till the first week of March). Analysis suggests that the per day floating population during the festival would be approximately 15 lakh to be spread over and the *Kumbh* ground area of 7.47 km^2 or 747 ha (Master Plan 2021). Considering a population density as 225 persons per ha, total population would be about 1.68 lakh in a single day. It would therefore be reasonable to consider and provide water facility for a population of 2.5 lakh @ 20 lpcd. Total water demand at this rate would be of order 50,00,000 litres per day i.e. 5 MLD.

7.4 Key Issues

Though at city level all the indicators reveal that service levels are well above the desired norms, but the key issues with regards water supply system are:

- Fall in water level of Yamuna during summers. This has adversely affected the intakes of two wells of the Karelibagh raw water pumping station;
- Rapid unauthorized expansion of the city is responsible for stretching the work of the JS beyond limits;
- High elevation of some localities makes water pressure difficult;
- There are frequent power failures for prolonged periods causing severe damage to the system operation as well as the operational schedule;
- For supply of water to consumers, the intended schedule by the authority is an intermittent supply spread over a daily period of 10 hours in three shifts, 6.00 am to 10.00 am, 12.00 noon to 2.00 pm, and 6.00 pm to 10.00 pm. This schedule with adequate levels of supply can hardly be met due to various operational constraints. Residents at lower elevations receive water for longer durations as against those at higher locations;
- Large quantity of water is lost through the system due to leakages in pipeline and appurtenances as well as due to unaccounted for water consumption. There are huge losses to the extent of 40% in the system;
- A number of components in the system have inadequate capacity. This includes – raw water pumping mains, clear water reservoirs in Khushroobagh Water Works, zonal overhead tanks and pipelines at various

places. Such deficient system provisions lead to poor level of supply to consumers; and

- Although 217 MLD of water is distributed to the public, the level of services is not up to the norm, because of topography of the town and improper distribution network. Water scarcity has become a regular feature in certain areas especially in summers, because of old network of pipelines. Most of these have completed their designed life and need be replaced.

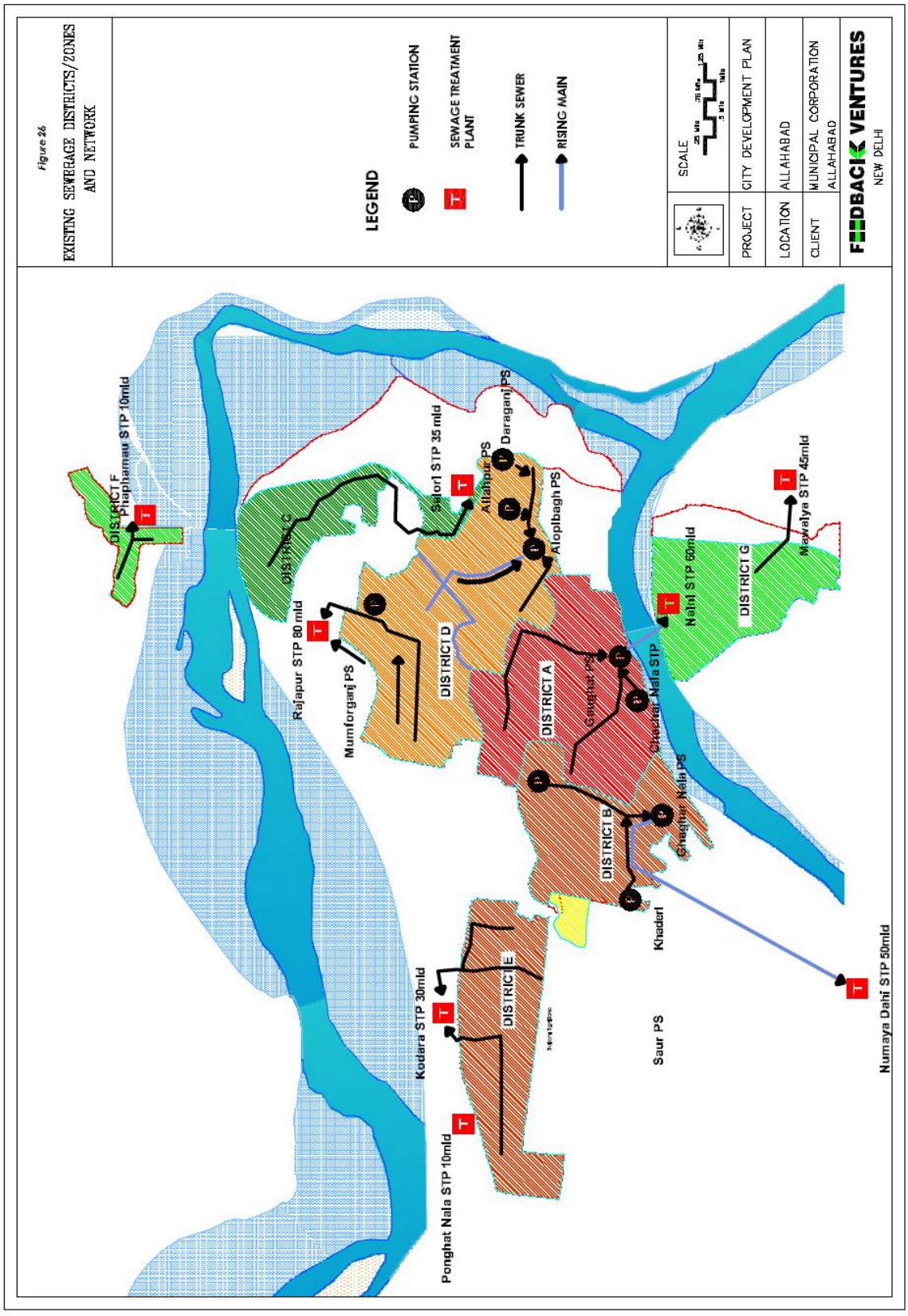


Figure 26
EXISTING SEWERAGE DISTRICTS/ZONES AND NETWORK
LEGEND
PUMPING STATION
SEWAGE TREATMENT PLANT
TRUNK SEWER
RISING MAIN
SCALE
PROJECT CITY DEVELOPMENT PLAN
LOCATION ALLAHABAD
CLIENT MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
DISTRICT F
Phaphamau STP 10mld
DISTRICT C
Sulori STP 35 mld
Allahpur PS
Daraganj PS
Alopibagh PS
Rajapur STP 80 mld
Mumforganj PS
DISTRICT D
DISTRICT A
Ghaghat PS
Chachar Nala STP
Naini STP 60mld
DISTRICT G
Mawalya STP 45mld
DISTRICT B
Ghaghar Nala PS
Khaderi
Saur PS
Kodara STP 30mld
DISTRICT E
Ponghat Nala STP 10mld
Numaya Dahi STP 50mld

8.0 Sewerage and Sanitation

8.1 Present Scenario

Sewerage system of Allahabad is very poor. The city as a whole does not have sewerage system. Wherever exists, it is not an exclusive sewerage system. It is a combined wastewater and storm water collection system. The collection system is neither complete nor efficient. It exists only in the central core of Allahabad city (sewerage district A & D).

Most of the existing sewers are old brick sewers which have outlived their design life. The structural condition of sewers in most stretches is poor. Hydraulic capacities are insufficient even for the present flows. All existing lines have heavy silt depositions. Sewers are severely choked due to ingress of solid waste. All lines have large variations in constructed slopes. Due to inadequacies of the existing system, as described above, most of the city's wastewater ends up in surface drains which convey it to Ganga/ Yamuna rivers.

Unlined drains are found choked by garbage and solid wastes like polythene, papers, wrappers etc. Wastewater flowing through the unlined drains is producing foul smell in the city due to putrefaction of the organic matter and is polluting the environment. Since the wastewater remains stagnant in the drains for 24 hours, it is good place of breading for mosquitoes, flies and harmful bacteria and viruses. This may cause unhygienic condition to the extent of epidemic in the city.



Condition of the existing system is also poor. During the reconnaissance survey of the city, most of the sewerage system was found chocked by silt and garbage. Solid materials lying in the sewerage lines restrict the flow. Cleaning and maintenance of sewer lines is not proper. Due to silting of the solids in the line, the carrying capacity gets drastically reduced and there develop chances of overflow during the peak flows due to reduced section and carrying capacity of the system. During the rainy season, situation in certain areas becomes serious for these get flooded.

8.2 Wastewater Collection & Treatment

There is acute scarcity of wastewater treatment plant in the city and around 60% wastewater meets the two rivers without treatment. The condition of the existing pumping stations too is not good.

56 wards are covered with this system making it a 7047 ha of service area. A total of 502.16 km length of sewer line is laid to cover the service area. Most of the sewer system is however very old and already lived its design life. At present, a total of 65,028 houses have access to the system. The city has been divided into 7 sewerage districts (*Table 29; Figure 26*) having an integrated sewerage system.

Each district is sub-divided into 1-2 sub-districts/ zones and has its own sewage treatment works.

Table 29: Operational Districts and Service Areas

Sl. No.	Name	District Code	Service Area (ha)
1.	Gaughat	A	1321
2.	Alopibagh	B	874
3.	Katra	C	647
4.	Sulem Sarai	D	1709
5.	Naini	E	928
6.	Teliarganj	F	186
7.	Phaphamau	G	1382
Total Area			**7047**

Source: JN, 2005-06

In addition to the seven existing sewerage districts in the city, the Master Plan 2021 has identified two future service areas (FSAa/ OGs) which are outside the municipal limits but have or will have, within the design horizon, a population density of more than 120 person/ ha. Hence, the sewerage system needs to be extended to OGs in the future. A non-sewer area (1563 ha) has been identified in the Jhusi district, where population densities are expected to remain below 120 persons/ ha within the design horizon and hence, for this area on-site sanitation has been recommended.

8.2.1 Gaughat District

Gaughat is located south of Allahabad bounded by Yamuna in the south and cantonment in the east. The capacity of Gaughat pumping station is 80 mld. There have been installed five vertical turbine pumps with discharging capacity of 37000 lpm for 35 m head. The station has a total installed capacity of 3083 lps and an allowable capacity of 1850 lps with 3 out of 5 pumps in operation. While the installed capacity of Gaughat pumping station is approximately 270 mld, only 90 mld wastewater is pumped to Naini STP through rising main which crosses Yamuna along the bridge (*Table 30*). However, the carrying capacity of each service area sewer lines of Gaughat district is given in *Table 31*.

Table 30: Details of Gaughat Pumping Station

Sl. No.	Capacity of Sump (Cu.m)	Detail of Pumping Plant	No	Installed Capacity (mld)
1	185	37000 lpm 35m head	5	270

Source: JN, 2005-06

Two more sewage pumping stations exist in the district to pump out the sewage from Lukergang and Kareli areas to Gaughat pumping station. Sewage from Lukerganj area is pumped from Lukerganj pumping station in to a 22*33 inche egg-shaped sewer which discharges into 54 inches dia sewer at Shaukat Ali road and finally into the Gaughat pumping station (*Tables 32-33*).

Table 31: Carrying Capacity of Sewer Lines of Gaughat District

Sl. No.	Trunk /main Sewer Line (Diameter in Inches)	Discharge Point	Service Area	Carrying Capacity (in lpm)
1	54	Gaughat SPS	Shaukat Ali Road Atala, Macerapur, Allarsuiya, Dariyabad, Kalyani Devi, Kareli	52,450
2	22*33* 54	Sewer at Atala	Lukergunj	9,400
3	62*93	Sewer at Atala	Atala, Khusroobag, Kollian Tola	1,31,700
4	27	Gaughat SPS	Bansmandi, Muthiganj, Mahabiran lane	12,680
5	22*33	Gaughat SPS	Muthiganj SPS	12,400
6	45	Gaughat SPS	Alopibagh, Bairhana, Baikabagh, GT Road	40,320
7	24	Gaughat SPS	Kydganj Chaukhandi lane	10,140
8	24	Gaughat SPS	Kydganj Shanker Lal, Bhargava Road	10,600
9	36*54	Gaughat SPS	Lowther Road	30,000
10	27*54	Sewer	Kareli	10,200

Source: JN, 2005-06

Table 32: Lukerganj Pumping Station

Sl. No.	Capacity of Sump (Cu.m)	Detail of Pumping Plant	Nos	Installed Capacity (mld)
1	44.5	6300 lpm, 7 m head 2130 lpm, 7 m head	2 2	24.30

Source: JN, 2005-06

Table 33: Lukerganj Sewers

Sl. No.	Trunk /main Sewer Line (Dia. in Inches)	Discharge Point	Service Area	Carrying Capacity (in lpm)	Remark
1	27	Lukergang SPS	Lukerganj	210	--

Source: JN, 2005-06

Table 34: Kareli Pumping Station

Sl. No.	Capacity of Sump (Cum.)	Detail of Pumping Plant		Installed Capacity (mld)
1	44.00	1230lpm, 12.5m head 700 lpm, 10.0m head	2 2	5

Source: JN, 2005-06

Sludge from Kareli pumping station is pumped into 18-inch dia sewer which is connected to the 54 inch dia sewer on Saukat Ali Road and is finally disposed off into the Gaughat pumping station (*Tables 34-35*).

Table 35: Details of Kareli Sewers

Sl. No.	Trunk /main Sewer Line (Dia. in Inches)	Discharge Point	Service Area	Carrying Capacity (in lpm)	Remark
1	18	Kareli SPS	Kareli	7680	--

Source: JN, 2005-06

8.2.2 Alopibagh District

Alopibagh district is located in centre-east of Allahabad mainland and is bounded by Ganaga in the east, Katra district in west-north and Gaughat district in the south. This district covers Allenganj, George Town, Tagore Town, Daraganj, Sohabatiyabagh, Alopibagh and the Civil Lines. Sewage of this area is pumped through 45 inch diameter pipe laid on GT Road which is finally disposed off into the Gaughat main sewage pumping station (MSPS). Details of the pumping station and its installed capacity are given in the *Table 36*. The carrying capacity of each service area sewer lines is given as *Table 37*.

Table 36: Details of Alopibagh Pumping Station

Sl. No.	Capacity of Sump (Cu.m)	Detail of Pumping Plant	No	Installed Capacity (mld)
1	17	11300 lpm 12.5m head	4	270

Source: JN, 2005-06

Table 37: Carrying Capacity of Sewer Line of Alopibagh District

Sl. No.	Trunk Sewer Line (in Inch)	Discharge Point	Service Area	Carrying Capacity (in lpm)
1	39*57	Alopibagh SPS	Mumfordganj, Katra, Tagore Town, JLN Marg	38,640
2	24	Alopibagh SPS	George Town	14, 520
3	27	Alopibagh SPS	JLN Marg, Phulvariya Road	5,760
4	30	45 inch dia Sewer at Bairhana	Old GT Road, Civil Lines	18,780
5	18	Daraganj Crossing SPS	M.G. Marg, Daraganj Ghat Sewer	8,880

Source: JN, 2005-06

8.2.3 Katra District

Katra district is divided into two sub-zones namely – Mumfordganj and Rajapur. The sewage is pumped through 500 mm dia pipe rising main into the high level gravity sewer laid on JLN Marg. Whereas, Rajapur sub-district covers Rajapur, Ashok Nagar and part of Thornhill Road. In this zone, there is no proper sewerage system. Details of the sewerage pumping system are given in *Table 38* whereas the carrying capacity of the sewer lines is indicated in *Table 39*.

Table 38: Details of Mumfordganj Sewage Pumping Station

Sl. No.	Capacity of Sump (Cu.m)	Detail of Pumping Plant	No	Installed Capacity (mld)
1	35	6800 lpm 27m head	2	23.50
2		1350 lpm 15m head	2	

Source: JN, 2005-06

Table 39: Carrying Capacity of Sewer Line of Mumfordganj Sub-District

Sl. No.	Trunk Sewer Line (in Inch)	Discharge Point	Service Area	Carrying Capacity (in lpm)
1	32	Mumfordganj SPS	Mumfordganj, Balrampur House, New Katra, Lajpat Rai Road	16,860

Source: JN, 2005-06

8.2.4 Sulem Sarai District

This district is undeveloped and uninhabited. It is situated in west part of the Allahabad. In this area, the sewerage system is not in operation except partly in Transport Nagar and Sulem Sarai. Although newly developed Transport Nager is yet to become fully operational, sullage water from Sulem Sarai Colony and Transport Nagar is stored into the two-oxidation ponds constructed to replace the shortage of conventional sewerage system within the premises.

8.2.5 Naini District

Naini area is planned for industrial development and is located southern part of the Allahabad. It covers entire Naini, Naini Bazaar, Industrial labour colony etc. Sewage is being pumped through two inlets of 20-inch and 30-inch dia pipes. *Tables 40-41* give details.

Table 40: Details of Naini Pumping Station

Sl. No.	Capacity of Sump (Cu.m)	Detail of Pumping Plant	Nos	Installed Capacity (mld)
1	20	2100 lpm, 22m head 1100 lpm, 20m head	2 2	9.2

Source: JN, 2005-06

Table 41: Carrying Capacity of Naini Sewer Line

Sl. No.	Trunk Sewer Line (in Inch)	Discharge Point	Service Area	Carrying Capacity (in lpm)
1	30	SPS	Naini, Naini Bazaar	17,820
2	20	SPS	Labour Colony	5,100

Source: JN, 2005-06

8.2.6 Teliarganj District

The district is divided into two sub zones as Salori and Rasulabad sub-districts. It is sandwiched on three sides by Ganga in the north, east and west, and by cantonment on the south. It covers less developed areas of Chandpur, Salori, Rasulabad, Teliyarganj and Govindpur. Collection of wastewater is done in two oxidation ponds which is finally pumped to Phaphamau for treatment.

8.2.7 Phaphamau District

Phaphamau is located northern part of main area and newly and less developed district. At present there is no conventional sewerage facility in the district.

To save the two holy rivers from any further pollution and to improve the living standard of the citizens of Allahabad, it is necessary to intercept the whole wastewater generated in the city by providing an effective collection system and treat it properly before disposing it to the rivers or to land.

8.3 Network Coverage

As per the JICA report, about 45% of the city, mostly the old city i.e. densely populated core, has been covered by 299.00 km long sewerage network; the rest 55% area does not have any wastewater collection system. There are no details available with the concerned departments (JN and JS) as regards size of the sewer line, number and size of the manholes, length and diameter of pipes between the manholes, condition of sewer pipes and its age, slope of the lines, and carrying capacity of the lines. In areas where sewerage system is not available, water flows through unlined, irregular drains and ultimately joins the rivers Ganga and Yamuna at different locations. The households, where sewerage collection system does not exist, discharge their wastes directly to streets drains and ultimately to the rivers through unlined *nallas*/ drains.

There are 57 unlined drains (*kutcha nallas*) carrying sewage from the entire city to the rivers Ganga and Yamuna. Out of these, 13 join Yamuna (2 in CB area and 11 (96.5 mld in the city). 36 of these join Ganga at different locations carrying a total discharge of 116.8 mld. Remaining 8 *nallas* don't pollute any river: 5 of these got dried in the sand of riverbed, 1 discharges into a pond and the other 2, carry water from seepage of canal and do not pollute river system. One *nallah* is joining Yamuna upstream from Sangam at a distance of 800-1000 m near boat club/ water sports complex and another one at approximately 300-500 m from the boat club thereby polluting the river water.

8.4 Sewerage Generation

Total amount of wastewater measured in drains and at sewage treatment plant (STP) in the year 2000 was about 210 mld which stands at 213.3 mld as on date,

out of which only 90 mld is diverted into the sewer collection system. This 90 mld wastewater is sent to Gaughat pumping station by intermediate pumping stations, numbering 7, as follows:

i) Chachar sewage pumping station (3 pumps of 18000 lpm discharge for 13m head and 2 pumps of 3470 lpm discharge for 13m head with a total installed capacity of 1016 lps);
ii) Lukerganj sewage pumping station (3 pumps of 6300 lpm discharge for 7m head and 2 pumps of 2130 lpm discherge for 7m head with a total installed capacity of 386lps);
iii) Daraganj sewage pumping station (3 pumps of 1500 lpm discharge for 22m head and 2 pumps of 600 lpm discharge for 22m head with a total installed capacity of 95lps);
iv) Allahpur sewage pumping station (3 pumps of 6000 lpm discharge and 2 pumps of 2400 lpm discharge with a total installed capacity of 380 lps);
v) Morigate sewage pumping station(2 pumps of 8400 lpm discharge and one pump of 4200 lpm with a total installed capacity of 350 lps);
vi) Alopibagh sewage pumping station(4 pumps of 11300 lpm discharge for 9m head and 3 pumps of 17000 lpm discharge for 10m head with a total installed capacity of 1603 lps);
vii) Mumford sewage pumping station(3 pumps of 6800 lpm discharge for 27m head and 2 pumps of 1350 lpm discharge for 15m head with a total installed capacity of 272 lps);

Further, the proposed Ghaghar *nalla* sewage pumping station shall have 6 pumps of 10800 lpm discharge and 4 pumps of 8400 lpm discharge with a total installed capacity of 1640 lps.

The details of quantity of wastewater generated in Allahabad is given in *Table 42* below:

Table 42: Quantity of Wastewater Generation in Allahabad

Sl. No.	Description	Unit	Quantity
1.	Population in sewer service area	No	308,304
2.	Population connected to sewer	No	200,494
3.	Waste water return rate per capita	lpcd	205
4.	Total waste water generated	mld	224.22
5.	Amount intercepted	mld	111
6.	Existing treatment capacity	mld	60

Source: JICA Report

8.5 Treatment System

There is acute scarcity of wastewater treatment plant in the city and around 60% wastewater meets the two rivers without treatment. The condition of the existing pumping stations too is not good. The capacity of Gaughat pumping station is 270 mld. At Gaughat pumping station, five vertical turbine pumps with discharging capacity of 37000 lpm for 35 m head has

been installed. The station has a total installed capacity of 37000 lps and an allowable capacity of 1850 lps with 3 out of 5 pumps in operation. Only 90 mld wastewater is pumped from through it to Naini STP through rising main which crosses river Yamuna along the bridge.

Since, the capacity of Naini STP is only 60 mld and cannot take the load of 90 mld, only 60 mld sewage is being treated and the rest 30 mld is mixed with the treated effluent from the STP and the mixed (partly treated and partly untreated) water flows down the canal. This canal water is being used for agricultural purposes in Naini and Dandi whereas the excess water is disposed off into the river Yamuna. The canal water, of which 1/3rd is untreated sewerage, is used for irrigation purposes which may contaminate the agriculture/ horticulture products. One STP of 29 mld at Salori near Buxibandh is under construction but the work has been held up due to some disputes and will take time to complete.

Since, the sewerage system carries storm water together with the sewage; there are more chances of wastewater logging during the rainy season. Most of the sewerage network is old and deteriorating, and requires replacement. It is quite possible that wastewater will be leaking from the joints and also from the damaged portions.

8.6 Sewer Connections

The number of households connected to sewers at present is unknown but thought to be relatively high in sewer-covered areas. However, a comparison between the total amounts of wastewater produced to total amount measured in open drains indicates that only 10-15% of the sewage is actually reaching trunk sewers. This indicates a serious problem at the branch sewer level.

The Master Plan identifies a number of trunk sewers facilities and lateral sewers. However the full benefits of these facilities cannot be realized unless a program to improve coverage of branch sewers and household connections is carried in parallel (*Table 43*). Future targets are proposed as a means of identifying the quantities of infrastructure and approximate budget requirements required over the planning horizon.

Table 43: Sewer Connection Ratios and Waste Generation - 2003

Sl. No.	District	Connection Status	Waste Generation (mld)
1	District A	23,732	99.81
2	District B	3,490	30.6
3	District C	0	25.62
4	District D	0	19.86
5	District E	7,635	20.76
6	District F	0	23.20
7	District G	0	4.37
		Total	**224.22**

Source: JICA Report

The ultimate sewer connection ratio of 80% has been selected to meet water quality improvement goals. However, achieving such a target may not be realistic given the large number of projects that have to be implemented in such a short timeframe. Furthermore it is not only a question of providing new infrastructure. There is also a huge backlog of maintenance and repairs to restore existing system.

8.7 Key Issues

- Majority of branch sewerage system is at any time either completely blocked or its capacity is severely reduced by silt and solid waste. Sewer maintenance is restricted to emergency clearing of blockages and is given low priority;
- It has been observed that sections of trunk sewers are heavily silted. Reduced capacity from silting results in sewage overflows from manholes to surface drains during peak flow periods. Problems may also be caused by structural damage in some sections;
- The existing trunk sewer system is over 100 years old and has been allowed to deteriorate to the point where rehabilitation or replacement is necessary. Many of the sewers have not been inspected;
- Poor record keeping and inadequate information for planning: The limited availability of records relating to pumping stations and the sewerage system makes planning for extending services and assessing the amount of sewage presently flowing into the sewer system difficult. This also prevents effective maintenance and corrective actions; and
- Damaged manholes, severe defects particularly around the *nalla* and connections of *nalla* to the sewerage system have led to the increased risk of solid waste entering and blocking the system.

9.0 Storm Water Drainage

9.1 Current Situation

The existing drainage system covers only 40% of Allahabad city. The storm water flows with the sewage through sewerage network and is pumped to rivers Ganga and Yamuna. This causes extra burden over the sewage pumps during rains and extra expanses due to consumption of electricity.

The system is very old and dilapidated, and 57 *nallas*/ drains carrying significant amount of wastewater. Out of the 57 *nallas*, 44 discharge into Ganga while 13 discharge into Yamuna. The other major drainage channels are discharge into either of the two rivers. The problem of stormwater drainage remains acute in several localities such as – Allahpur, Tagore Town, George Town and Hashimpur, Chaukharda, Khalasi Lines, Krishna Nagar up to Triveni road, main road of Ram Bagh, Talab Nawal Rai, Baghambari Road, Labour crossing, Matiyara Road, Tripathi colony and Nai Basti of Sohbatiabagh, Copper Road, Stanley Road, Lukerganj playground, Leader Road, Suraj Kund, Beli Colony village and Rajapur suffer from chronic water logging during the rainy season.

These drains are open and have large catchments area, the human and animal waste accumulated on the surface are flushed by runoff and is carried to the rivers which pollute the river waters. Open drains/ *nallas* are passing from the residential areas and are creating foul smell and unhygienic condition. There are no proper drains along the roadside.

9.1.1 Primary Drains

There are six major drains passing through the municipal area, viz. – Ghaghar, Chachar, Morigate, Allenganj, Rajapur, and Mumfordganj – carrying storm water and falling under the catchments area of River Yamuna. These drains carry significant amount of water to Ganga and Yamuna during the dry season and storm water mixed with sewage water during rainy season.

These drains are open and have large catchment areas. The human and animal waste accumulated on the surface is flushed by runoff and carried to rivers by these drains thereby polluting river waters. These drains pass from residential areas creating foul smell and unhygienic conditions. There are no proper drains along the roadside.

9.1.2 Secondary Drains

Storm water drainage is not proper through out the city. Only 20% of the roads and gullies in residential localities have proper drains. The rainwater passes through nearby nallas eventually falling into one of the two rivers. In most of the areas storm water drain is connected with sewage system. This creates problem for both.

The existing storm water drains connecting the roadside drains with rivers are 7-12′ wide. These are generally unlined and insufficient in terms of capacity as well as network. The silt in these nallas is usually cleaned once every year while the normal prescribed practice is to clean them twice. These usually get choked

because of polythene bags and solid wastes causing water logging throughout the city during the off-season rains.

9.2 Wastewater Management

The city has been divided into the six storm water planning zones and each zone is identified by the pumping station or the channel dealing with its discharge. *Table 44* below gives details of catchment areas, rainfall and discharge during the monsoon season.

Table 44: Catchment Area and Discharge of Waste Water

Sl. No.	Storm Water Zones	Catchment Area (Ha)	Rainfall Intensity (mm/Hour)	Discharge (Cusec)
1	Morigate	1279.00	12	19.00
2	Mumfordganj	259.00	12	4.00
3	Rajapur	184.00	12	2.90
4	Chachar Nala	127.50	12	1.90
5	Gate No -9	56.70	12	0.85
6	Gate No – 13	16.20	12	0.24

Source: Allahabad Development Authority

At present the storm water run off from various channels are pumped into the Ganga and Yamura Rivers during flood season. This process is carried out from four permanent and four temporary installed pumps at four stations as listed in *Table 45*:

Table 45: Pumping Capacity

Sl. No.	Pumping Station	Electric Pump		Diesel Pump		Total Installed Capacity (Cusec)
		Capacity (Cusec)	*Nos*	*Capacity (Cusec)*	*Nos*	
A	**Permanent Pumping Station**					
	Morigate	10 & 1	3	10	7 & 5	105
	Chachar Nala	20	1	10 & 5	4 & 5	85
	Bakshi Bandh	30	3	10	5	140
	Mumfordganj	-	-	10 & 5	2 & 3	35
B	**Temporary Pumping Station**					
	Gate No -9	-	-	5 & 3	1 & 1	8
	Gate No -13	-	-	5	2	10
	E.C.C.	-	-	1 & 0.75	2 & 2	3.5
	Gate No -1-5	-	-	2, 1.5, 1 & 0.75	2, 1.5, 2 & 2	9

Source: Allahabad Development Authority

9.3 Key Issues

Due to the combined system of sewerage and storm water drainage, a substantial quantity of silt and debris is drained into the sewer system which is detrimental to its life and proper functioning. Large quantities of storm water cause flooding and hydraulic overloads on the treatment plant. The entire network is dilapidating.

A separate and proper drainage network is required to be planned for the entire city to drain off the storm water, so that the quantity and quality of sewage water remains unaffected from the storm water and can be treated effectively.

The total system of storm water drainage requires –

- Realignment and upgradation of existing nallas;
- Augmentation of storm water drainage network based on contour maps;
- Lining of roadside drains;
- Cleaning of drains;
- Segregation of storm water drains from sewerage network; and
- An efficient and effective drainage system for the city.

10.0 Solid Waste Management

10.1 Introduction

The city of Allahabad lacks a planned solid waste management system, or at least the implementation of such a system. During the reconnaissance visit of the city, a vast amount of solid waste such as plastic bags etc was come across which finds its way into the sewers and surface drains thus chocking them. The major physical components of the Municipal SWM system in Allahabad are –

- Waste Generation
- Waste Composition
- Storage at source of generation
- Segregation of recyclable materials
- Primary collection
- Street cleansing
- Temporary storage
- Transportation, and
- Treatment & Disposal

The detailed understanding and holistic approach to each of the components mentioned above is very essential to comprehensively address the issues and problems of the solid waste management system.

10.2 Current Practices in SWM

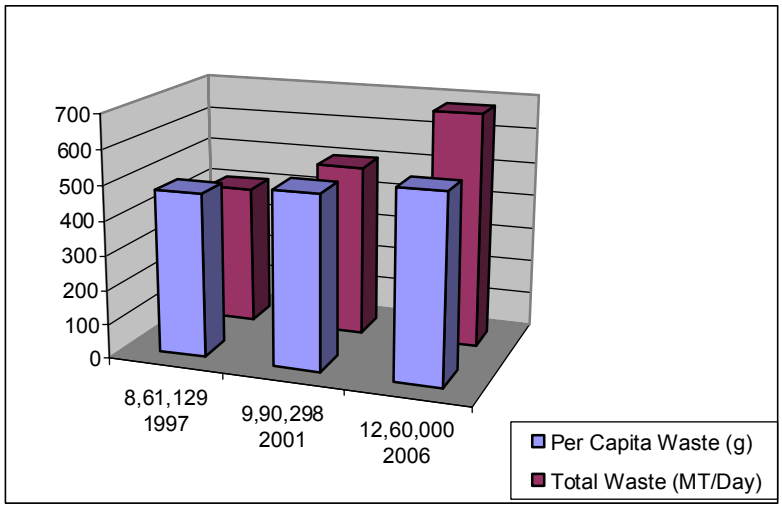
10.2.1 Waste Generation

Following are the major sources of generation of waste at town level –

- Local residents/house holds.
- Bazaar and vegetable markets
- Hotels and Restaurants
- Hospital and dispensaries
- Slaughter houses
- Fishes and poultry wastes.
- Domestic and stray animals, and
- Street sweepings
- Others

The SWM in Allahabad is in a critical situation. About 680.0 MT of solid waste is generated every day in the Allahabad city. It has been assumed that the local residents of towns generate solid waste at the rate of about 539 grams per capita per day on an average. This average generation of solid waste includes local inhabitants (comprising the wastes generated by the resident population, shops and commercial establishments, vegetable and fruit markets, construction and demolition and hospital wastes – non-infectious and non-hazardous) and the floating population in the town. Information of solid waste generation and collection is represented in *Figure 27*. With growth in population from 8,61,129 in 1997 to 9,90,298 in 2001 and 12,60,000 in 2006, per capita generation of waste has grown from 474 gm, 506 gm and 539 gm for the corresponding year. The daily total waste generated at the city level has grown from 408 MT to 501 to 680 MT. This goes to indicate that per capita waste has increased over the years.

Figure 27: Municipal Solid Waste Generation in Allahabad



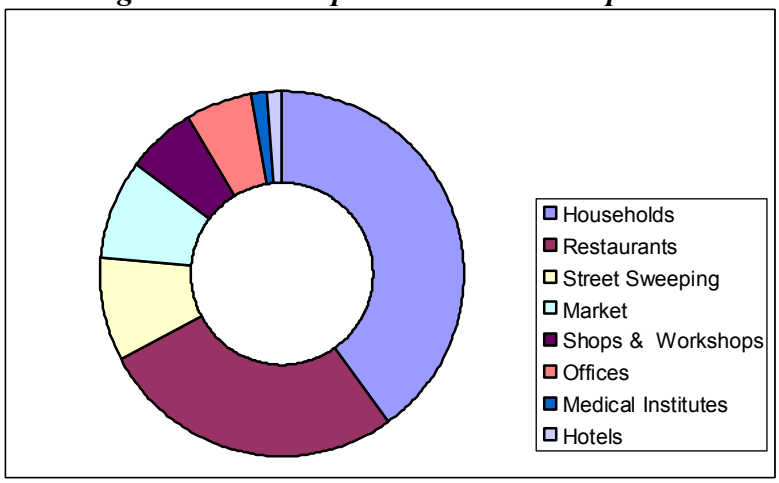
Source: Solena Group Inc, DPR

10.2.2 Waste Composition

From the primary surveys, it has been found that the wastes produced from households, shops and commercial establishments are composed of food and other discarded waste materials such as paper, plastic, glass, metal, rags, packaging materials. Households, shops and commercial establishments in Allahabad city do not practice segregation of recyclable waste at source, evading possibility of reduction in quantity of waste generation at source. Such waste on the streets or in the municipal bins goes to disposal sites un-segregated. In absence of the practice of segregation of waste at source, rag pickers pick up part of this waste in soiled condition.

The Consultants have undertaken primary surveys of the households to understand the quantity of waste generated. Currently, there is no system of door-to-door collection of wastes and source segregation of wastes, though these practices are considered as the best for effective solid waste management. Allahabad revealed the following quantities of solid waste generation with respect to each sources as graphically represented in *Figure 28* below:

Figure 28: Municipal Solid Waste Composition



Source: Solena Group Inc, DPR

The maximum waste generated obviously from households (40%), followed by restaurants (27%), street sweeping (9.1%), markets (9%), and so on.

The construction/ demolition wastes are also generated in the town to some extent mainly by repair, maintenance, reconstruction and construction activities. These wastes contain bricks, cement concrete, stones, tiles, wood, etc. and the storage of this waste at the time of its generation is totally neglected. By and large, people deposit construction waste, after salvaging useful material, just outside their houses/ shops/ establishments or on to the streets or along major roads, creating nuisance, pollution and obstruction to traffic

10.2.3 Storage at Source

Scientific and systematic storage of waste at source is not in practice and in the absence of the desirable system of storage of waste at source, the waste is thrown on the streets, treating streets as receptacle of waste. Many of the local inhabitants have the habit of throwing wastes *on the streets and expect the s*anitary *w*orkers of the MCA to clean. This has led to an ugly and unhygienic atmosphere prevailing in the town. Thus there is a need to educate people to change their habit so as to store waste at source, dispose off the wastes as per the directions of the MCA and effectively participate in the activities of the MCA to keep both towns clean.

It was observed during the primary surveys that mostly there were no bins for storage of domestic, trade and institutional wastes at source. Very few households/establishments had such practice in place. It was also observed from the interviews and discussions with the general public that even when the dustbins were put at various places in the town, they were never properly utilized. The waste used to be strewn all over the area in and around the dustbins.

The habit of throwing the wastes to the streets and/or drains was more prevalent in case of small restaurants and eateries. Clogging of drains due to wastes thrown was a common scene in the town. It was also observed that the local inhabitants and the shopkeepers alike caused the frequent clogging of drains due to excessive use of polythene. There is therefore a pressing need for the authorities to ban the use of plastic and polythene in the whole state.

10.2.4 Segregation of Recyclable Material

Segregation of recyclable waste at source is completely absent at the moment. The building wastes generated by construction activity containing bricks, cement concrete, stones, tiles, wood as also food and other household wastes are dumped together on street side and roadside, thereby creating nuisance, pollution and obstruction to traffic. In the absence of proper segregation practices at source, rag pickers pick up parts of this waste in soiled and hazardous conditions. The waste is then dumped on the open ground untreated.

At a minimum, segregation can be introduced in select residential localities and commercial areas. Door-to-door collection and consequent segregation would yield good results.

10.2.5 Primary Collection

The systematic and scientific system of primary collection of waste does not exist in the city. System of storage of wastes at source is not in practice and is yet to be developed. The primary collection of waste as mentioned above is effected through depositing of wastes by the waste producers and by the sanitary workers appointed by the local body into the open areas.

The local inhabitants use variety of tools and equipments for the storage of the wastes at source. During the primary surveys, it was observed that the people use the following storage equipments to facilitate the primary collection of wastes:

- Buckets
- Plastic bins
- Plastic bags, and
- Metal bins with/ without Lids

The people do not have the habit of depositing the wastes properly into the open areas though they carry the wastes up to these areas. Most of the citizens, just throw the wastes around the open areas adding wastes to the street sweepings.

The process of primary collection of wastes is undertaken in an unsystematic and unscientific manner. The local inhabitants do not follow any safety measures while handling the wastes and deposition of the wastes into the open areas. During the primary surveys, it was observed that the people generally throw wastes into the large open spaces along the roads. Due to this habit, when wind blows, these wastes spread to a larger area. When the town receives heavy rain, these wastes further aggravate the problem by blocking the drains.

There is no doorstep collection. At present the residents deposit the wastes into open areas and bins wherever available and sanitary workers clear them from these spaces. Further there is no separate bin placed for depositing the recyclable wastes and hazardous wastes.

There is a clear need to mobilize community participation and design and develop an appropriate system of primary collection of wastes so as to synchronize with the storage at source as well as waste storage depot facility ensuring that the waste once collected reaches the processing or disposal site through a transportation system without multiple handling of the waste.

10.2.6 Street Cleaning

Under the Municipal Act, road/ street sweeping and drain cleaning are the obligatory responsibilities of the MCA and the solid waste generated in the town shall be collected and removed by the sanitary workers of the Public Health Division. About 2021 permanent and 500 temporary sanitary workers are deployed at Allahabad city. The break-up of the staff available is as follows:

- Health Officers : 2
- Supervisors : 110
- Sanitation Inspector : 11
- Sweepers : 1900 (Permanent); 500 (Part time/ contract)

The major sources of street wastes in the city are:

- Natural wastes comprising dust blown from unpaved areas, decaying

vegetation like fallen leaves, blossoms and seeds originated from trees and plants;

- Road traffic wastes like oil, rubber, accidental spillage of load of vehicles in addition to the construction wastes and animal droppings of related vehicles; and
- Behavioral wastes include litter thrown by pedestrians, households, establishments along with human spittle and excrement of domestic pets.

There is a wide gap between the waste collected and generated. The figures of collected waste do not contain silt generated due to street and road sweepings. The above figures also show that quantity of solid waste collected is a small percentage of total waste produced both towns.

Apart from the solid waste collection, no rectification work is undertaken from time to time to make the management more effective. The areas having ugly sight and unhygienic atmosphere, kept abandoned or unattended are not given attention. Due to the lackadaisical attitude of the municipal workers and the inhabitants in general, the MCA is unable to clear the solid waste generated within 24 hours of its generation as per the SWM practices.

10.2.7 Temporary Storage

The community bins have been provided at some places in the city for collection of municipal waste but most of the areas have no bins to dump their waste and through it on the roadside and the *Safai Karamcharis* store the waste at one place by hand carts. The waste from these community bins is transferred to disposal site by the tractor trolleys.

10.2.8 Transportation

The main objective of transportation is to clear waste from the city and dispose it off at the disposal site. It is the responsibility of the local body to ensure that the city is clean by transporting the wastes from various temporary storage points to the dumping grounds with the help of transportation fleet maintained by the local body. The movement of wastes from the households, street sweepings, etc. to the temporary storage collection points is the collective responsibility of the sanitary workers and the citizens of the city.

Table 46: Vehicles and Equipments for Secondary Collection

Sl. No.	Vehicle / Equipment Type	Number
1.	Dumper Placers	22
2.	Excavator cum Loaders (JCB)	5
3.	Loaders	4 (2 Working + 2 under Repair)
4.	Waste Hand Carts	1000
5.	Rickshaw trolley	20
6.	Three Wheelers	24
7.	Tractors/ Tippers	6
8.	RC Bins	200
9.	Refuse collector bins	3
10.	Nalla cleaner bucket machine	1

Source: Health Officer, MCA

From *Table 46*, it is evident that the MCA has inadequate vehicular fleet to transport the waste generated within the town. The repairs and maintenance of vehicle and equipment is carried out in the workshop of MCA.

10.2.9 Treatment & Disposal

Currently, the wastes are not being treated. There is not any kind of treatment system existing for the treatment of solid waste of the city. All the waste generated is being collected and transported to different sites for open dumping on land. As a result, the whole area in and around the disposal sites is unhygienic and posing a serious threat to the environment and to the public health.

At present the waste is being dumped on open land in Bakshi bandh near Chandra Shekhar Azad Setu areas, Naini near Ganga Pollution Board areas and Kydganj areas. A 10-acre land has been identified in Karali and 10-acre land has been identified in Naini for the dumping of solid waste.

The main objective of treatment and disposal is to clear waste from the disposal site in an environmentally friendly manner with little/ no serious implication on the health and hygiene of the micro and macro environment. It is the responsibility of the local body to ensure safe disposal of the wastes generated within its jurisdiction.

10.3 Key Issues

Following observations, issues and conclusions are drawn from the above analysis:

- Solid waste consists of food waste and other discarded materials;
- Segregation of recyclable waste at source not practiced;
- Construction waste is deposited on streets and roads creating nuisance, pollution and obstruction to traffic;
- There is no system of storage of waste at source, it is thrown on streets;
- The system of primary collection of waste is practically non-existent;
- All roads and streets are not being swept on a daily basis;
- There are no sufficient vehicles to handle the waste;
- There are no facilities at the disposal site. The waste is being dumped on the open ground.

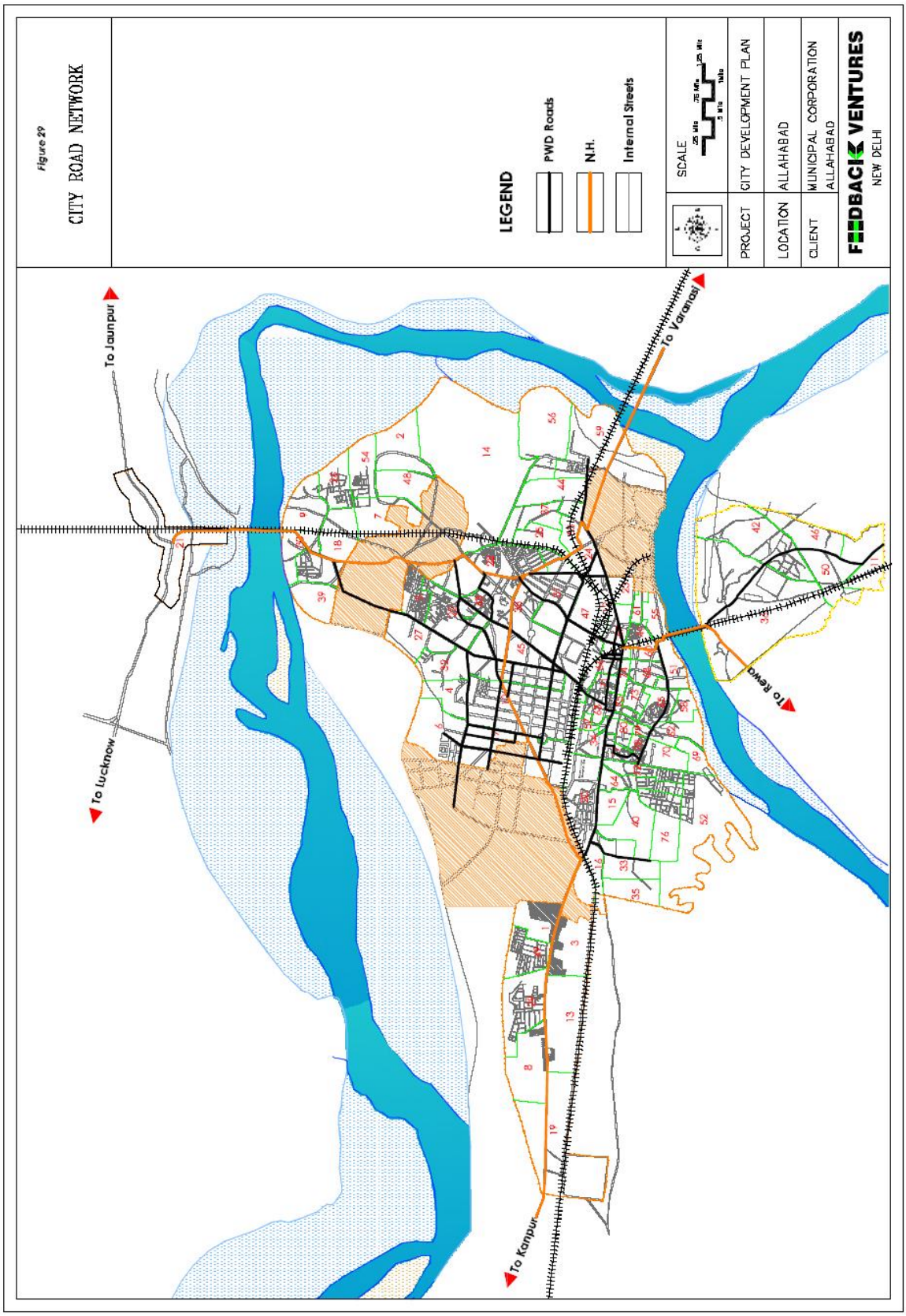


Figure 29
CITY ROAD NETWORK
LEGEND
PWD Roads
N.H.
Internal Streets
SCALE
PROJECT
CITY DEVELOPMENT PLAN
LOCATION
ALLAHABAD
CLIENT
MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
To Jaunpur
To Varanasi
To Lucknow
To Rewa
To Kanpur

11.0 Roads and Transportation

11.1 Transportation System

Transport infrastructure forms the backbone of any economy. It plays a very significant role in the growth and development of the city. It is also responsible, besides other factors, for the spatial growth of the city by increasing the accessibility of sites on the periphery of the city.

The objective of studying the transport sector is to analyze the role of transport in the present scenario and to identify its strengths and weaknesses. The road and the rail sectors play a very significant role in Allahabad and the peripheral region.

11.1.1 Road Network Details

The road network (*Figure 29*) characteristics vary through the city. The network can be divided into three major areas in terms of road hierarchy– the old city area, civil lines, and the rest of the city.

The Old City constitutes the core of the present city structure providing not only residential land use but also educational, commercial (retail, wholesale), small scale manufacturing of iron, plastics, wooden goods etc. The old city has an irregular road network comprising of major roads, which are almost 2-3 lane wide. A conspicuous feature of the layout of arteries is that all of them are linked with the main transport artery, the Grand Trunk Road which passes through the heart of the area and hence interlinked with each other. The secondary roads are narrower and congested due to encroachment; the best examples are Attarsuiya and Malvia Nagar. Another significant observation made is that in the south of the GT road, there is an absence of broad roads, whereas to its north lie the major broad, arterial road network of Zero Road, Leader Road, Swami Vivekanand Road, Johnsonganj Road etc.

The road conditions are good inside the walled city, but the road capacity is reduced due to the presence of a large number of slow moving vehicles and idle parking. There is a high level of conflict between pedestrians and vehicular traffic in several parts. The old city comprises of closely spaced residential areas of Mohatsamganj, Badshai Mandi, Bahadurganj and Malviya Nagar. The wholesale and retail trade activities are also located in this part of the city which further creates congestion and bottlenecks.

The Civil Lines area was reserved solely for the Britishers during the colonial period. The imprints of planning caste their shadow in the civil lines area, as one can catch the sight of spacious residential areas (mostly Bunglows).

The Civil Lines area is a well planned in the form of gridiron pattern interspersed with Open Park like spaces. It is an area of broad avenues, Raj-era bungalows, modern shops and some outdoor eating stalls. The major roads have a 4-lane divided carriageway with wide footpaths on either side. The collector roads are 2 to 3 lanes wide and intersect the major roads at a traffic rotary. The area is divided from the old city by Allahabad railway station.

The Rest Of The City comprises of Mumfordganj and Phaphamau in the north, Allapur in the east and Naini in the south. The road network in these areas varies from 2 lanes to a single lane. The population density in some of the areas is too high; this coupled with unplanned development results in complicated traffic problems. Some areas are low-lying where there is water-logging problem during the rainy season. This leads to degradation of the roads. The drainage system is absent on major roads and the runoff water merges with main trunk sewer lines.

11.1.2 Intersection Details

Signals are installed for safe and efficient movement of traffic and pedestrians when the accident rate at a particular intersection is high.

In Allahabad, signals are installed at more than 15 intersections. Most of these are not functioning properly. The traffic police handles traffic at these intersections at the moment. The traffic rules at the intersections are not obeyed because of factors like lack of proper road geometrics, markings and signages.

The intersection in the city needs to be properly designed because a large volume of through traffic passes cross the city. Lack of proper signage and road geometric leads to accidents. The city has witnessed 950 casualties in the year 2003 because of road accidents. Majority of the road intersections have improper road geometric. There are many intersections, which are identified as black spots because they meet at acute angles.

In civil lines the gridiron pattern of road network generates a large number of intersections. The majority of these intersections have a small traffic rotary at the intersection. Rotary intersection is present on some of the major roads in the city like MG.Road, Jawaharlal Nehru Marg etc.

11.1.3 Road Fatalities

A total of 2246 medico-legal autopsies were conducted in the mortuary of SRN Hospital of MLN Medical College, Allahabad, between December 2003 and November 2004, out of which 950 (42.29%) cases were due to fatal road traffic accidents (RTA). Majority of the victims were pedestrian (340; 35.79%) followed by motor cyclists/ scooterists (30.53%). Pedal-cyclists were 52 (5.47%) whereas others and unknown comprised 54 cases. A detailed analysis is given in *Tables 47-48* below –

Table 47: Distribution of Road Users Involved In Fatal RTA

Sl. No.	Type of road users	No of cases	Percent
1	Pedestrian	340	35.79
2	Pedal –cyclists	52	5.47
3	Motor cyclists/ Scooterists	290	30.53
4	Vehicle occupants	214	22.53
5	Others	40	4.21
6	Unknown	14	1.47
	Total	950	100

Source: Epidemiological Study[16]

Table 48: Break-up of Vehicles in RTA

Sl. No.	Type of vehicle involved	No of Accidents	Percent
	Heavy vehicles		
1	Truck, oil tanker	375	39
	Bus	181	19
	Total	*556*	*59*
	Light vehicles		
2	Taxi, car, Jeep	205	22
3	Two wheelers	157	17
4	Other	25	3
5	Unknown	7	1
	Total	*394*	*42*
	Grand Total	**950**	**100**

Source: Epidemiological Study, Ibid.

Majority (59%) of vehicles involved in the RTAs were heavy vehicles (trucks, oil tanker, motor buses), followed by light vehicles – taxi, car, jeep, van etc – 22%, other vehicles (tractors, tampos, bullockcarts, road-roller, rickshaw) were involved in only 3% cases (*Table 48*).

Pedestrians are the most common victim of road fatalities is supported by the fact that they accounted for the maximum fatalities (35.58%). This is due to the fact that there is significant presence of vendors and other commercial installations by the roadside and there are no proper footpaths. Besides, majority of the road users are pedestrians exposed to the risk of accidents.

Heavy vehicles are largely responsible for 58.52% cases. This is attributed to high speed, constrained road capacities, and the through highway traffic that has nothing to do with the city. The Epidemiological study cited here depicts that the maximum (83.05%) accidents took place on highways for these happen to be the busiest roads with heavy traffic loads. Further, there is lack of proper footpath facility and drivers are tempted to drive at high speeds.

Over 83% accidents involve heavy vehicles such as trucks and are caused on highways.

Table 49: Distribution of RTA by Type of Road

Types of Roads	No of Accidents	Percent
Highway	***789***	***83.05***
Road	150	15.58
Lane	6	0.63
Other places	2	0.21
Unknown	5	0.53
Total	**950**	**100**

Source: Epidemiological Study, Ibid.

11.1.4 Public Transportation

There are three bus terminals in Allahabad – Civil Lines, Leader Road and Zero Road. Uttar Pradesh State Road Transport Corporation (UPSRTC) has a fleet size of 450 buses. Presently the buses mainly serve long distance inter-city trips.

The civil lines terminal provides connectivity to Gorakhpur, Varanasi, Lucknow, Faizabad, Nepal etc. Leader Road terminal connects Allahabad to Delhi, Kanpur and Uttaranchal. Zero road links Allahabad to Rewa and other parts of Madhya Pradesh.

The Zero Road bus terminal is located in the old city area leading to acute problem of traffic jams and low performance. Similarly the Leader Road bus terminal is located on the road with buses parked on the carriageway leading to accidents, congestion and degradation of urban character.

There are four major routes on which the buses operate. The state of public transportation needs to be improved. Presently the commuting trips are catered to by the 3-wheelers (tempos) on some selected routes in the city.

Absence of an efficient public transportation system in the city has led to operation of intermediate public transport (private vehicles) which operates from different parts of the city. There are 10 routes on which mini-buses operate, details of which are given in *Table 50* below –

Table 50: Route Details for Bus Operation

Sl. No.	Route	No of Vehicles/ Buses
1	Servants of Society building to Karchana	34
2	Servants of Society building to Ghoorpur	35
3	MBA building to Hanumanganj	74
4	MBA building to Sahson	38
5	Stanley Road to Nawabganj	10
6	Stanley Road to Soraon	15
7	Bharat scouts and Guides to Phaphamau	01
8	Dr. Katju Road to Jamunipur Kotwa	03
9	Ring Road	07
10	Kutchery to Naini ADA Colony	09
	Total	***226***

Source: UPSRTC

Table 51: Private Taxis and Relevant Details

Sl. No.	Route	No of 3-Wheelers
1	Railway Station to Kutchery (via Johnstonganj, Civil Lines)	50
2	Railway Station to Mundera/ Manauri, Bamrauli, Bharwari, (TP Nagar)	150
3	Railway Station to Daraganj/ Sangam	115
4	Railway Station to kareli	40
5	Civil Lines to Govindpur via Kutchery	50
6	Kutchery to Govindpur	50
7	Civil Lines to Nawabganj, Mansurabad (upto Lal Gopal Ganj)	45
8	Civil Lines to Soraon, Mau Ima	40-50
9	Mansarovar to Naini (via Rambagh, Bairahana, upto Karchana)	75
10	Mansarovar to Ghoorpur (via Rambagh, Bairahana)	75
11	Civil Lines to Jhunsi (Via Alopibagh)	100
12	Chauphatka/ High court to Kutchery	125
13	Dhoomanganj to Jhalwa	50
	Total	925

Source: Allahabad Taxi Union

The mini-buses operating in the city need to be upgraded as old vehicles adds to frequent breakages and increase in vehicular pollution in the city. These do not have proper terminal facilities or amenities.

People from the fringe areas use buses to commute to their work place. The number of buses commuting to these areas is very less resulting in overcrowding and uncomfortable journey. Major intra city trips are catered to by the 3-wheelers (shared-tempos) which operate on 13 routes within the city. The three-wheeler is the major cause for pollution and congestion within the city. Lack of parking spaces and absence of defined stops leads to traffic jams. The details of the routes and numbers are given as *Table 51*.

Cycle rickshaws make a major mode of transport within the city where the tempo routes are not present. They act as a feeder service and are used for short and long trips. The trip length of cycle rickshaw is 1-8 km.

11.1.5 Parking

Allahabad has three major commercial areas namely Chowk (old city), Katra and Civil Lines area. The existing parking analysis indicates that the Civil Lines area have a 30m wide street network (Master Plan 2021). There is a provision for on-street parking along the linear commercial areas on either side of the road.

In case of old city area there are no parking provisions. The vehicles are parked on the carriageway resulting in traffic jams and congestion. There is no proper demarcated cycle rickshaw stand, which occupies a significant share in the public transport.

In Katra the situation is more complicated because of narrow streets. The vehicles are parked on the streets resulting in frequent traffic jams. Encroachment on the ROW and absence of footpath force the pedestrians to walk on the carriageway resulting in conflict between pedestrians and vehicular traffic. The shifting of the Katra Sabzi Mandi has reduced this problem in small stretch of the market.

11.2 Travel Characteristics

There is a large mix of motorized and non-motorized traffic in the old city area which results in low average speeds of 5-25 km/ hr and delays. Cycle rickshaws occupy major share in traffic in the old city which is about 70%, followed by 2-wheelers and cyclist.

Table 52 below shows the total number of registered motor vehicles in Allahabad during the year 2001-2006. It is seen that the number has increased from 2 lakhs to 4 lakhs in a span of five years. Two wheelers occupy the maximum share of 80% of the total traffic.

Table 52: Registered (On-Road) Vehicles in Allahabad

Year	Multiaxi led Articula ted Vehicle	Truck s & Lorrie s	Light Motor Vehicles (goods)	Total Buses	Total Taxies	Total Light Motor Vehicles (Passenge r)	Total Two Wheeler s	Cars	Jeeps	Omni Buses	Tracto rs	Other Vehs. Not Covered	Grand Total
2001	148	3652	2398	1066	480	4976	233217	1651 7	7345	276	16612	932	287619
2002	245	3850	2716	1298	773	5441	251452	1839 9	7360	414	17717	933	310598
2003	446	4134	3075	740	857	5953	276121	2295 5	7663	2012	18796	12	342764
2004	645	3923	2007	719	504	4695	303187	2567 5	7738	2253	19813	279	371438
2005	1003	4295	2530	896	540	5144	332391	2844 3	7773	2313	21001	918	407247
2006	2121	4039	3196	995	348	5662	381443	3374 4	7848	2383	22279	2035	466093
	4608	23893	15922	5714	3502	31871	1777811	1457 33	45727	9651	116218	5109	171966 6

11.3 Key Issues

Issues as follows, have been identified relating to traffic and transportation –

- GT road (NH-2) crosses the city. This leads to the unwanted entry of heavy vehicles within the city and creates accident-prone area throughout the stretch. This problem shall be partially eliminated by the completion of Allahabad bye-pass by NHAI.
- Rewa road (NH-27) is the major connector of MP to UP and Kolkata this leads movement of through traffic within the city.
- Lack of proper road geometric (Lane markings, footpath, Drainage, radius etc)
- High number of accidents.
- No parking space provisions in commercial areas.
- Saturation of capacity of some of the intersections.
- Railway line dividing into two half resulting in too many level crossings.
- Existing RUB are quite narrow they need to be widened to smoothen the traffic flow
- Large percentage of slow moving vehicles in the old city leading to reduced level of service.
- Ineffective traffic control and management measure – most of the roads in old city are used for haphazard on-street parking.
- Absence of public transport system in the city has resulted in improper operation of intermediate public transport vehicles causing traffic congestion.
- Heterogeneity of traffic obstructs the traffic flow and causes congestion on arterial roads
- Low bus handling capacity of the terminals.
- Bus terminals located in the core city area.
- Capacity saturation of some of the major roads.
- Pollution due to the use of petrol and diesel in public transport.

12.0 Street Lighting

12.1 Introduction

The light fittings are provided and maintained by MCA whereas the poles/ lamp posts belong to the UPPCL. The operation and maintenance of streetlights is entrusted with MCA and it has a separate department for street lighting. This department looks after the installation of new fittings, identifying and changing the faulty lights and switching on and off the lights at proper time throughout the MCA limits.

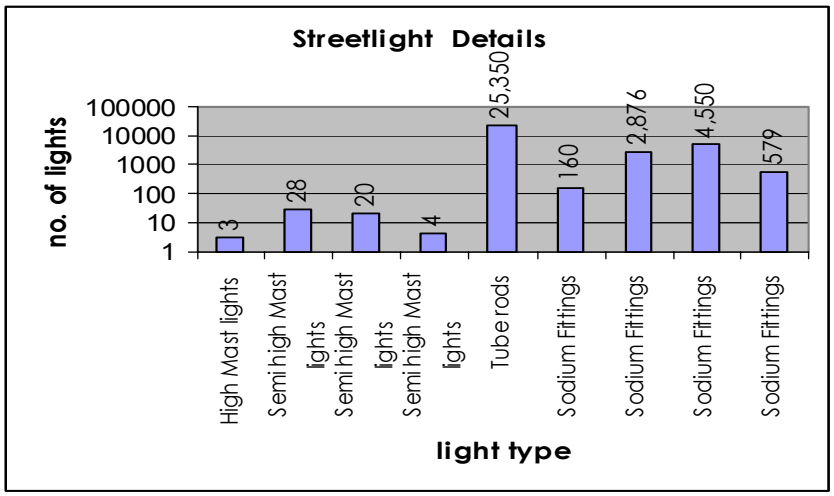
12.2 Current Situation

Presently the Number of Streetlights is 33,515 fittings/ points. The details of the street lighting are given in the *Table 53* and *Figure 30* below.

Table 53: Details of Streetlights

Sl. No.	Light type	Details	No
	High Mast light		
01	High Mast lights	(30 m ht)	3
02	Semi high Mast lights	2x400w, 6 fittings	28
03	Semi high Mast lights	400w, 4 fittings	20
04	Semi high Mast lights	400w, 3 fittings	4
	Street lights		
05	Tube rods	1x40w	25,350
06	Sodium Fittings	400w, 1 fittings	160
07	Sodium Fittings	250w, 1 fittings	2,876
08	Sodium Fittings	150w, 1 fittings	4,550
09	Sodium Fittings	70w, 1 fittings	579

Figure 30: Details of Streetlights



The staff strength of the department is 112.

13.0 Environmental Aspects

13.1 Environmental Quality

Rapid population growth coupled with poor infrastructure facilities has led to poor environmental quality in the city. The roads/ streets are dirty, littered with used plastic bags, wrappers and other kinds of municipal solid wastes. Local inhabitants are in general, observed to be having the habit of throwing wastes on streets which leads to an ugly and unhygienic environment in the city. During heavy rainfall, these wastes flow into the drains and sewers thereby aggravating the problem of sewer blocking. The poor infrastructure system in the city *viz.,* narrow roads, insufficient parking spaces, erection of electric pole and electric transformers on ROW/ intersections, encroachment on roads etc results in traffic jams and poor environmental situation in the city. Location of bus stands in the old city area and passage of highways give rise several bottlenecks in the city area. The heavy traffic causes rise in temperatures and is responsible for air and noise pollutions.

The overall environment of Allahabad city is not good and needs be improved by providing proper infrastructure facilities like separate sewerage and storm water drainage systems, roads and parking places, green parks, tree plantation, efficient solid waste management system, rehabilitation of slum people and an efficient potable water supply system. Major population of the city lives in slum areas where infrastructure facilities are very poor even absent in some areas. Due to shortage of individual and community toilets, people practice open defecation. This adds to poor and unhealthy environment.

Sewerage system of the city is very poor. Large untreated sewage is disposed of in the rivers Ganga and Yamuna through *kutcha nallas*, which pollutes the river water. In the areas where sewerage system is absent, the households have connected their wastewater directly in to the open drains which is causing an ugly and unhygienic condition in the city.

As the Allahabad city is situated on the banks of perennial rivers Ganga and Yamuna, which are originated, from the glaciers Gangotri and Yamunotri. The water at the origin is crystal clear with a very high purity. But these rivers are polluted by the industrial and municipal wastewater from different cities and the water quality of the river at Allahabad becomes poor.

As such there are no polluting industries to pollute the environment of the city. Polluting industries have been located in separate zone (Naini area). Only small-scale industries have been allowed and located in the city area. This keeps the city environment safe from industrial pollution.

Market areas in the city are congested and shopkeepers have encroached roads. Movement of vehicles, and pedestrians becomes difficult during peak hours. The roads are littered with solid waste generated at market level. The environment in the market areas is not healthy. Commercial areas are also not well maintained. Cleanliness is poor.

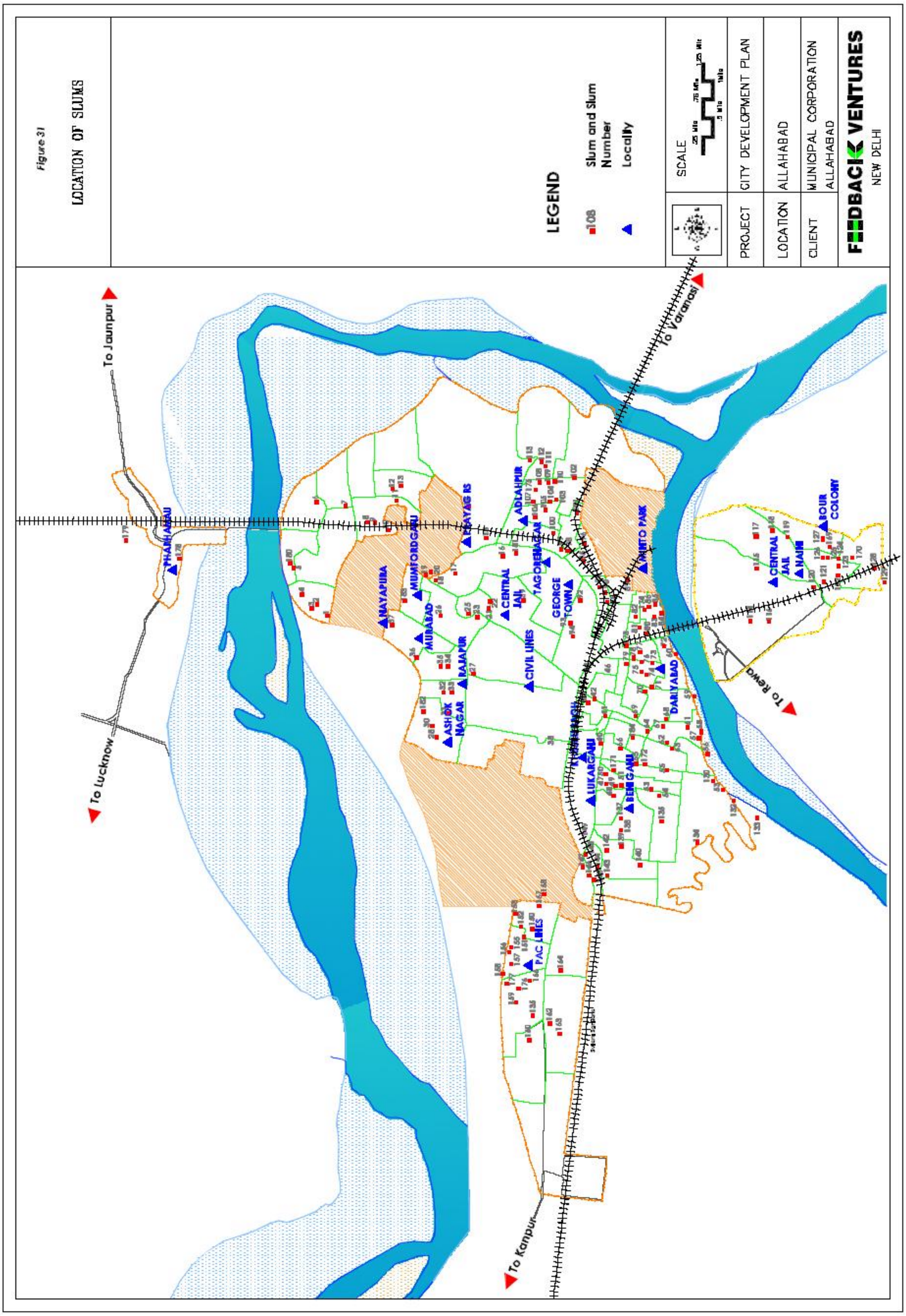


Figure 31
LOCATION OF SLUMS
LEGEND
Slum and Slum Number
Locality
SCALE
PROJECT CITY DEVELOPMENT PLAN
LOCATION ALLAHABAD
CLIENT MUNICIPAL CORPORATION ALLAHABAD
FEEDBACK VENTURES
NEW DELHI
To Jaunpur
To Lucknow
To Kanpur
To Varanasi
To Rewa
PHAPHAMAU
NAYAPURA
MUMFORDGANJ
PRAYAG RS
MURABAD
RAJAPUR
ASHOK NAGAR
CIVIL LINES
CENTRAL JAIL
TAGORE NAGAR
GEORGE TOWN
ALLAHPUR
MINTO PARK
DARIYABAD
LUKARGANJ
PAC LINES
NAINI
BOUR COLONY

14.0 Basic Services for Urban Poor

14.1 Characteristics of Slums

As such no recent studies are available about the extent of poverty levels in Allahabad, but the discussions with stakeholders reveal that the poverty levels are very low and that their main concerns are unemployment, security of land tenure, quality of housing and access to basic infrastructure and civic amenities. It could be true that absolute poverty as per the general definition i.e. *not enough to eat,* may not exist here, except among a small section of people who lack even housing and other amenities.

But if other parameters of urban poverty like housing, access to better sanitation facilities and capability to function in the society are considered, almost all slum dwellers can be categorized as urban poor. The urban poor population (slum population) in Allahabad is nearing 1/3rd of total population and the rapid growth of slums has largely contributed to social and environmental problems in the urban area.

Defining and Measuring Poverty

Poverty in a city is complex to define – a large number of indicators such as health and well-being, and income are involved. There are a number of ways to define poverty and measure it.

The simplest definition of poverty is to describe it as the lack of specific consumptions (i.e., not enough to eat). A broader definition defines poverty as the lack of command over commodities exercised by a population. Another, more sophisticated definition is based on the capability of poor to function in society. Access to basic services, especially adequate and safe water, health and sanitation, and education are now increasingly being recognized as an important indicator of poverty.

There are several standards, widely accepted representations of poverty – for example, the Head Count Index (HCI) signifies the percentage of people below poverty line, while Poverty Gap (PG) measures the depth of poverty (in statistical terms, this stands for the mean distance below the poverty line as per cent of the poverty line).

DFID's White Paper on International Development (DFID, 1997) refers to people living on "less than 1 US$ per day at 1985 purchasing power parities adjusted to current price terms" as suffering 'extreme poverty'.

14.1.1 Slum Settlements & Population

A large number of slums (*Annex 3*) are located along the riverbed, in the core of the old city, in the cantonment area and other environmentally sensitive areas (*Figure 31*). There are 185 slums with a total population of 3,30,000 covering almost 27.4% of the total population. Whereas a rapid survey of authorized and unauthorized settlements/ slums and urban villages[17] carried out by Oxfam (India) Trust in 2005 suggests that there are 283 poor settlements or slums in Allahabad with a population of 3,63,550 persons. This constitutes 30% of the total population of the city. However, as per the CoI 2001, only about 15% of city's population lives in slums. *Table 54* depicts the decadal increase in the slum population.

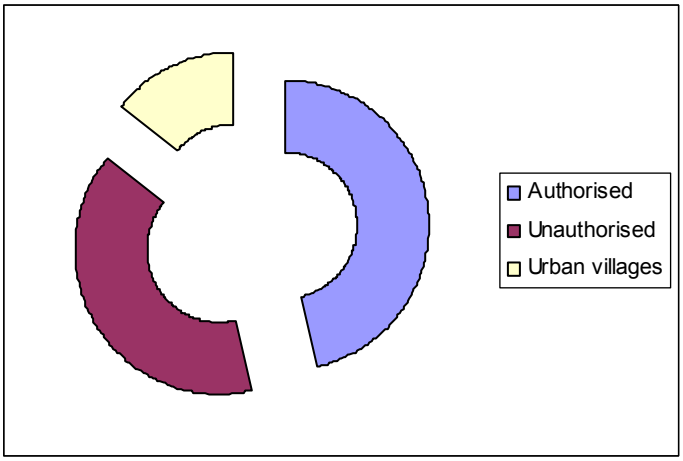
Table 54: Slum Population

Year	Total Population (Lakhs)	Slum Population	% of Total Population
1991	7.93	0.83	10.5
2001	12.06	3.30	27.4

Source: Census of India 2001, and SUDA.

Of the total 283 slums, there are 59 slum settlements having a total of 20-50 households while 159 settlements inhabit over 200 households. There are about 131 authorized slums, 112 unauthorized ones and 40 urban villages (*Figure 32*).

Figure 32: Break-up of Slums



Source: Oxfam India Report, 2005

14.1.2 Growth of Slum

The three-fold growth of slums in the last decade can be attributed to a combination of factors as under:

- Poor economic conditions – can neither pay rent for proper housing nor can afford to buy a house;
- Desire to live close to one's own community;
- Involvement of religious or political groups who have vested interests;
- Inability on the part of the local administration to prevent encroachment of government-owned land;
- Large-scale emergence of nuclear families; and,
- Migration from rural areas in search of livelihood as urban areas provide commercial and industrial set-up offering greater employment opportunities.

14.2 Status of Community Facilities

This section deals with the access of slums and urban poor in Allahabad to basic services, drawing from secondary information and interactions with stakeholders. It also reviews past and present programs for service delivery to urban poor in the city. The aim is to identify key issues in service delivery to the poor in Allahabad and suggest strategies that would enable the MCA and other local bodies/ parastatals to address these issues and fulfil their mandate of providing basic services to the poor in the city, as per the mandatory reform.

14.2.1 Water Supply

The slum settlements are not getting sufficient water to fulfil their water demand and are therefore made to meet the requirement on their own. About 30% population of the city is poor and resides in the slum areas. 43 slums are located along the railway lines and in the CB areas where basic services are both very poor and negligible. Only about 25% to 30% slum people (authorized slums + unauthorized slums) have individual water supply connections and rest 70% to 75% people are dependent either on the public stand post and hand pumps or do not have accessibility to the potable water/ municipal water. Slum settlements are scattered in the entire city and a separate arrangement of water supply system especially for them cannot be provided. An integrated water supply system is to be designed and laid in the city, which can provide the adequate amount of water to the citizens, including slum dwellers, so as to satisfy their daily water demand without leaving any poorest of the poor of the city.

14.2.2 Community Toilets & Bathing Facilities

There are 111 existing CTCs at various locations in the city which are grossly inadequate given the size of slum population calling for open defecation in many places. Salient features of these are identified below:

- 84 CTCs are connected to sewer lines while 27 have individual septic tanks;
- 103 CTCs are operational and 8 un-operational;
- 23 CTCs have no reliable water supply; and
- 30 do not have any electricity supply.

The responsibility of construction of these CTCs is with the MCA and DUDA. MCA directly constructs these through its engineering division while DUDA hires agencies like Sulabh and NEDA for so doing. The operation and maintenance is mainly done through the private contractors hired by either of the agencies or MCA itself in return to this people has to pay user charges.

There is proposal for more number of these facilities to be constructed under the Ganga Action Plan but there are some existing problems that will need to be looked into. The problems are summarized as follows

- Lack of availability of space for construction of CTCs;
- Limited disposal options for waste water as majority of areas are not covered by the existing sewerage system;
- Lack of sense of ownership among the residents – facilities are looked upon as something that has been provided by the government, and it is the government's responsibility to "run" the CTCs;
- There is no involvement of residents in design, location or O&M of the CTCs;
- Difficulty in maintaining facilities that are affected by poor quality of construction resulting in frequent breakdowns, and eventual non-functioning of the CTCs;
- Erratic power supply leading to non-functioning of pumps and thereby inadequate water supply affecting the cleaning of CTCs;
- Resistance to payment of user charges in certain pockets leading to inadequate financial resources for O&M – "*why pay for poor facilities?*"
- Lack of cohesiveness/ coordination between different agencies in implementation of the low cost sanitation programs; and
- No mechanism for obtaining feedback from the users for any improvements.

14.3 Character of Slums

The rapid growth and development of slums in Allahabad city has led to deterioration of its physical environment. Majority of slums have[18] very poor water supply and sanitation facilities; most are either without sewer or with partially sewer, with disposal of household waste water and solid wastes taking place directly into open *nallas*, which adversely affects drainage in these areas, leading to water logging. The poor environmental conditions within the slum areas have adversely affected the health of the residents. Financial constraints on the part of civic authorities and un-authorized nature of the slums have also contributed to non-delivery or partial delivery of basic amenities.

Some startling comparisons made in the Oxfam Report between the authorised and unauthorised slum settlements are –

- Poor people living in unauthorized slums do not have access to minimum basic services while there are better basic services in authorized slums;

- Only 3% houses are *pucca*, 20% semi-*pucca* and 77% *kutcha*) in unauthorized slums whereas 70% houses in authorized slums are *pucca*. There are about 40% *pucca* houses in urban villages;
- 60% houses have individual connections in authorized slums whereas it is only 10% in unauthorized slums;
- 85% inhabitants in authorized slums have individual hygienic toilets where as 85-90% people in unauthorized slums take to open defecation; and
- 60% people in authorized slums have individual electricity connection while this figure is only 10% in unauthorized slums.

14.4 Status of Health

The perceived health risk in the city has been estimated by looking at the data from the CMO's (Chief Medical Officer) office, which is responsible for the collection of data from hospitals, urban family welfare centres, and voluntary organizations etc for communicable diseases. *Table 55* shows the number of reported cases of communicable diseases in Allahabad.

According to the table, diarrhoea cases have been reported constantly. In the year 2000, jaundice has been reported in epidemic form with 13 deaths being reported. The city of Allahabad has grown in the plains left by the river Ganga when it diverted its course. Many of the present housing societies are located in these flood plain areas and in the year 2000 the city had to fight a manmade flood. Due to malfunctioning of one of the pumping stations on a rainy day the sewer water flowed back into the city streets and houses of the people.

Table 55: Number of Reported Cases of Communicable Diseases

Year	Gastroenteritis		Diarrhoea		Jaundice		Khasra (measles)		Food Poisoning	
	A	D	A	D	A	D	A	D	A	D
2000	-	2	2	0	795	13	0	0	0	0
2001	4	0	673	4	11	0	22	0	0	0
2002	0	0	426	10	8	0	2	0	0	0
2003	0	0	875	10	0	0	2	0	0	0
2004	0	0	639	8	0	0	0	0	25	0

Source: Health Directorate, Allahabad

A- Affected, D – Deaths

The figures listed in the table are an underestimation of the original figures. This statement can be made based on the response to discussions held with prominent doctors in the city. All of the doctors confirmed the fact that gastroenteritis was a regularly reported problem and on an average 50% of the patients treated by them daily are suffering from water borne diseases.

14.5 Slum Housing

The average household size in slums in Allahabad is about 6 versus 4.5 for the city as a whole. Only 3% houses are pucca (20% semi pucca and 77% kutcha) in unauthorized slums whereas this is 70% in authorized slums. There are about 40% pucca houses in urban villages.

A 500 crore Valmiki Ambedkar Awas Yojna was started in the year 2002 but it still stands incomplete. DUDA's annual progress reports indicate that only 70 houses have been built in the financial year 2003-04 (*Table 56*) which is a very small number as compared to the need of city. Also, the rehabilitation colonies already constructed under the scheme are located far away from the commercial and residential areas where the poor are employed and lack basic services, thus escalating the opportunity cost and rendering them an economically unviable proposition as far as livability is concerned.

An average plot size of 15 m^2 has been allotted to all families that are rehabilitated without taking into account the needs of the people.

14.6 Slum Improvement Schemes

The data from the past three years reveals that money for slum improvement has been mainly spent under four schemes namely,

- Slum Improvement Scheme;
- Swaran Jayanti Shahri Rozgar Yojana;
- National Slum Development Program; and
- Valmiki Awas Yojna.

As *Table 56* indicates a large chunk of money every year from the slum improvement scheme is being spent on construction of *nali/ kharanjas*. Apart from that there is no spending to improve the Water and sanitation situations in the slums, which is reported to be very grim.

Table 56: Slum Improvement Schemes and Resources Utilised

Name of the slum improvement scheme	Amount Spent (in lakhs)		
	2002-2003	2003-2004	2004-2005
Slum Improvement Scheme			
Nali Kharanja Improvement	71.13	30	54.5
Laying of Sewer Lines	√	--	
Construction of Kitchen Sheds	--	--	3.5
Swaran Jayanti Sahari Rozgar Yojana			
Swa-Rozgar Yojna (Training Program)		15.84	√
National Slum Development Program			
Development of Women and Child in Rural Areas	1.25	1.25	5
Thrift and Credit	0.53	11.21	2.98
Group Formation		2.53	
Installation of Handpump	166.33		
Valmiki Awas Yojna		Built 70 houses	

Source: DUDA Annual Reports 2002-03, 2003-04 and 2004-05

14.7 Key Issues

The three-fold growth of slums in the last decade can be attributed to a combination of factors summarised as –

- Poor economic conditions – can neither pay rent for proper housing nor can afford to buy a house;

- They are caused due to desire of living close to one's own community;
- Involvement of religious or political groups who have vested interests in developing slums;
- Inability of local administration to prevent encroachment of government-owned land;
- Large-scale emergence of nuclear families;
- Water and sanitation situation in slums is very grim;
- Open defecation is common and use of public toilets is limited;
- Across the slums, the drains are open and invariably choked with garbage;
- Open disposal of garbage from rive side slums blocks the drains and results in flooding during the monsoon season;
- The Indira Awas Yojana is yet to see the light of day to improve the conditions of slum dwellers, and a comprehensive slum development strategy needs be worked out; and
- Migration from rural areas in search of a livelihood as, urban areas provide the commercial and industrial set-up that offers greater employment opportunities.

15.0 Urban Governance & Institutional Framework

15.1 Introduction

There is a large number of institutions in Allahabad responsible for urban development and service delivery. This section examines the key institutions responsible for service delivery in terms of their organisational structure and functions and concludes with highlighting the key governance issues that need to be addressed for smooth implementation of the CDP.

15.2 Institutions for Urban Development & Service Delivery

Urban development and service delivery in Allahabad is the combined responsibility of a set of state level and city level institutions. These institutions and their key functions are listed in *Table 57* below segregated in terms of institutions functioning at the state level and city level.

Table 57: Institutions and Their Functions

Institution	*Key Function*
State Level	
UP Pollution Control Board (UPPCB)	Pollution control and monitoring especially river water quality and regulating industries
Public Works Department (PWD)	Construction of roads main roads and transport infrastructure including construction and maintenance of Government houses and Institutions
State Urban Development Authority (SUDA)	Apex policy-making and monitoring agency for the urban areas of the state. Responsible for providing overall guidance to the District Urban Development Authority (DUDA) for implementation of community development programs
Town and Country Planning Department (TCPD)	Preparation of Master Plans including infrastructure for the state (rural and urban)
UP Jal Nigam (JN)	Water supply and sewerage including design of water supply and sewerage networks. In the last two decades 'pollution control of rivers' has become one of their primary focus areas
UP Avas Vikas Parishad (AVP)	Nodal agency for housing in the state. Additionally involved in planning, designing, construction and development of almost all types of urban development projects in the state. Autonomous body generating its own resources through loans from financial institutions
City Level	
Allahabad Jal Sansthan (JS)	Nodal agency for water supply in the city. Key functions include O&M of water supply and sewerage assets. AJS proposes tariffs and collects revenues – however, tariffs need to be approved by the UP Jal Nigam and the State Government)
Allahabad Municipal Corporation (MCA)	Nodal agency for municipal service delivery and O&M. Its key functions include: • Primary Collection of Solid Waste • Maintenance of Storm Water Drains • Maintenance of internal roads • Allotment of Trade Licenses under the Prevention of Food Adulteration Act

	• O&M of internal sewers and community toilets • Management of ghats • Construction of Community Toilets
Allahabad Development Authority (ADA)	Responsible for preparing spatial Master Plans for land use and development of new areas as well as provision of housing and necessary infrastructure
District Urban Development Authority (DUDA)	Implementing agency for plans prepared by SUDA. Responsible for the field work relating to community development – focussing on the development of slum communities, construction of community toilets, assistance in construction of individual household latrines, awareness generation etc.

15.3 Institutional Roles & Responsibilities

15.3.1 Municipal Corporation of Allahabad

Clarity of roles and responsibilities of institutions is a pre-requisite for good governance. This clarity is conducive for role separation that in turn is an enabling factor for a host of good governance practices like accountability, transparency etc – factors that lead to efficiency in service provision as well as efficiencies in institutions. As an introduction to examining issues of governance in Allahabad, the following *Table 58* identifies the roles and responsibilities of the various institutions in terms of planning, implementation and maintenance.

Table 58: Roles and Responsibilities of Various Institutions

Function	Planning & Design	Implementation	Maintenance
Land Use/ Master Plan/ Building Permission	ADA	ADA, MCA	ADA, MCA
Water Supply	UPJN	UPJN, AJS	AJS
Sewerage	UPJN	UPJN, AJS	UPJN, AJS
Roads and Transportation	UPAVP, ADA, TCPD, PWD, MCA	UPAVP, ADA, TCPD, PWD, MCA	UPAVP, ADA, TCPD, PWD, MCA
Street Lighting	ADA, UPAVP, MCA, PWD,	ADA, UPAVP, MCA, PWD,	UPAVP, ADA, TCPD, PWD, MCA
Drainage	ADA, UPJN, AJS, MCA, UPAVP	ADA, UPJN, AJS, MCA	UPAVP, ADA, TCPD, PWD, MCA
Solid Waste Management	MCA	UPAVP, ADA, TCPD, PWD, MCA	UPAVP, ADA, TCPD, PWD, MCA
Parks and Green Spaces	ADA, UPAVP, MCA, PWD,	UPAVP, ADA, TCPD, PWD, MCA	UPAVP, ADA, TCPD, PWD, MCA
Pollution Control	UPPCB	UPPCB, UPJN, AJS, MCA	UPPCB, UPJN, AJS, MCA
Slum Development	SUDA, DUDA	AJS, UPJN, PWD, MCA	AJS, UPJN, PWD, MCA
Community roads, toilets, water-supply	SUDA, DUDA, MCA, AJS	AJS, UPJN, PWD, MCA	AJS, UPJN, PWD, MCA
Heritage Conservation	ASI	ASI	ASI

It may be noted that there are functional overlaps between institutions in the realm of functions that have been transferred to the local government under the 74th CAA.

Figure 33: Organisation Structure of Elected Wing of MCA

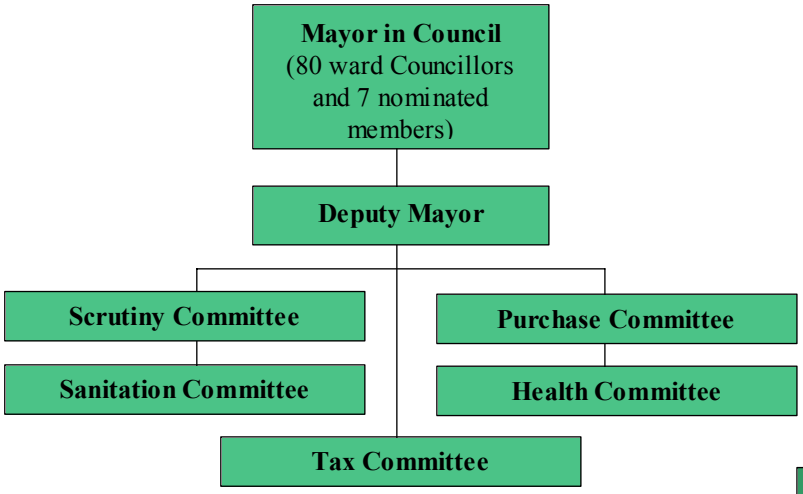
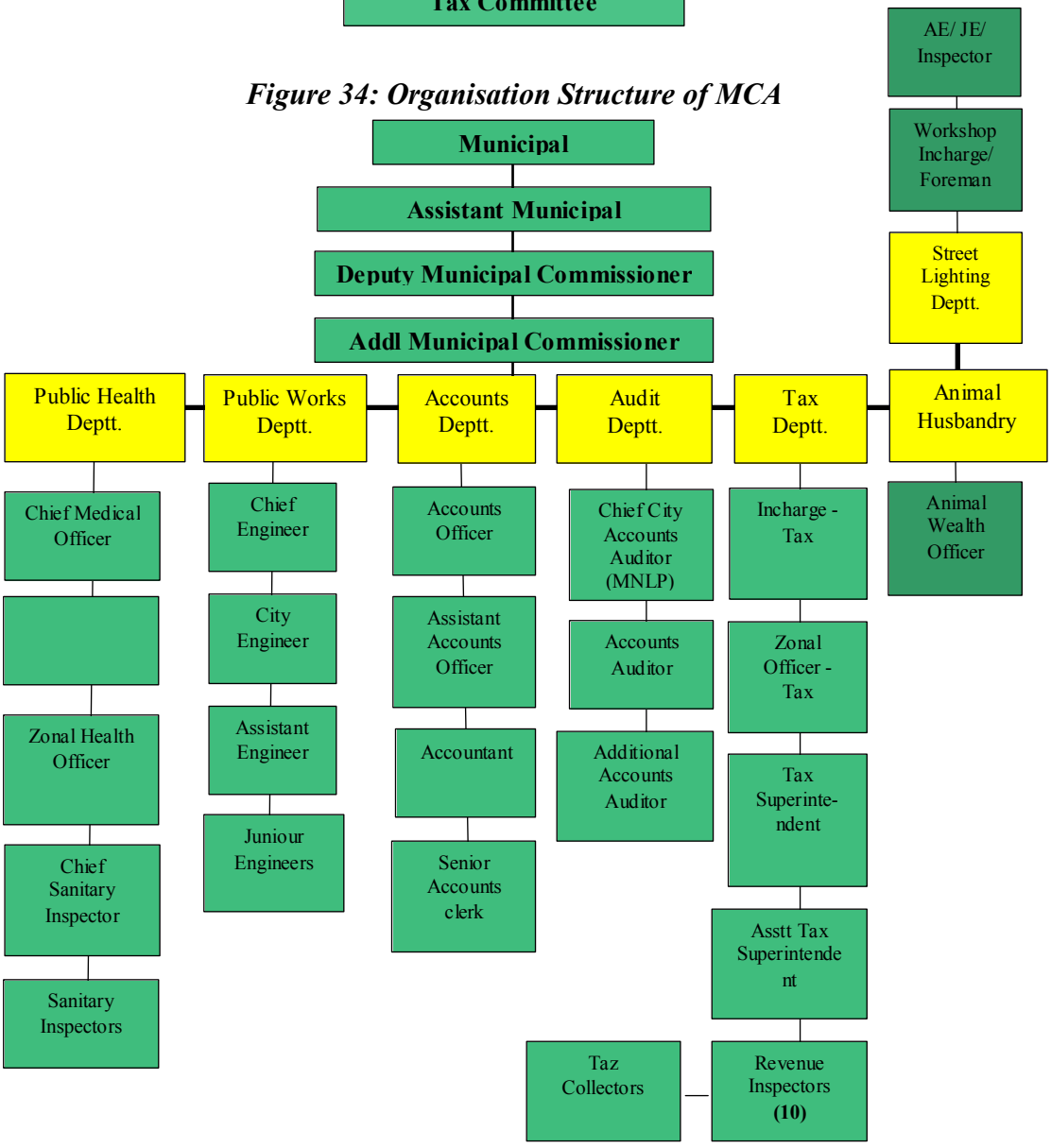


Figure 34: Organisation Structure of MCA



The Allahabad Urban Agglomeration includes the CB Area, Phaphamau, Naini industrial area and Jhusi. There is a proposal for amalgamating the Jhusi Municipality with the MCA through extending the boundaries of the latter by 2009. Allahabad hosts the *Kumbh mela* every 12 years on a site that falls within the CB limits and thus under the jurisdiction of the Ministry of Defence. This does not allow the MCA or other institutions responsible for urban development to intervene in the provision of tourism infrastructure or river front development – this lack of access is a loss of potential revenue from the huge numbers of visitors to the place at these events.

Table 59: Key Departments at MCA

Department	Key Functions
Tax Department	▪ Tax demand and collection ▪ Information provision about taxes and fees ▪ Tax collection from rickshaws, horse carts etc ▪ Stamp Duty Collection
License Department	▪ Collection of License fee ▪ Issue of Licenses
Public Health Department	▪ Cleaning of roads, sewerage lines, public toilets. ▪ Waste collection and disposal ▪ Registration and issue of death- birth certificate. ▪ Public health and related works ▪ Restriction on sale of unhygienic food and water ▪ Restriction of activities and profession harming public health ▪ Management for prevention of the epidemic ▪ Tests to ensure potable drinking water
Accounts Department	▪ Record of municipal income and expenditure ▪ Dissemination of information relating to finances
Street Lighting Department	▪ Maintenance and repair of lighting points ▪ Establishment of new street lighting ▪ Arrangement of light on public places and festival ▪ Maintenance of electric crematoriums ▪ Maintenance of municipal properties like-MCA buildings, ward offices, hospitals, nursery schools etc
Workshop	▪ Maintenance of Municipal vehicles and machinery
Public Works Department	▪ Road and street maintenance ▪ Construction of roads and drains. ▪ Construction and maintenance of parking spaces ▪ Maintenance of green spaces ▪ Purchase of equipments for workshop and street light departments ▪ Road widening and intersection designs ▪ Construction & maintenance of municipal shops & buildings ▪ Provision of street lights ▪ Construction of community toilets and other utilities.
Establishments	▪ Appointments, promotion, transfers and enquiry of staff.
Audit Department	▪ Auditing of accounts
Animal Husbandry	▪ Maintenance & provision of Animal penns & slaughter houses ▪ Catching of street animals ▪ Issue of licences for commercial use of animals.

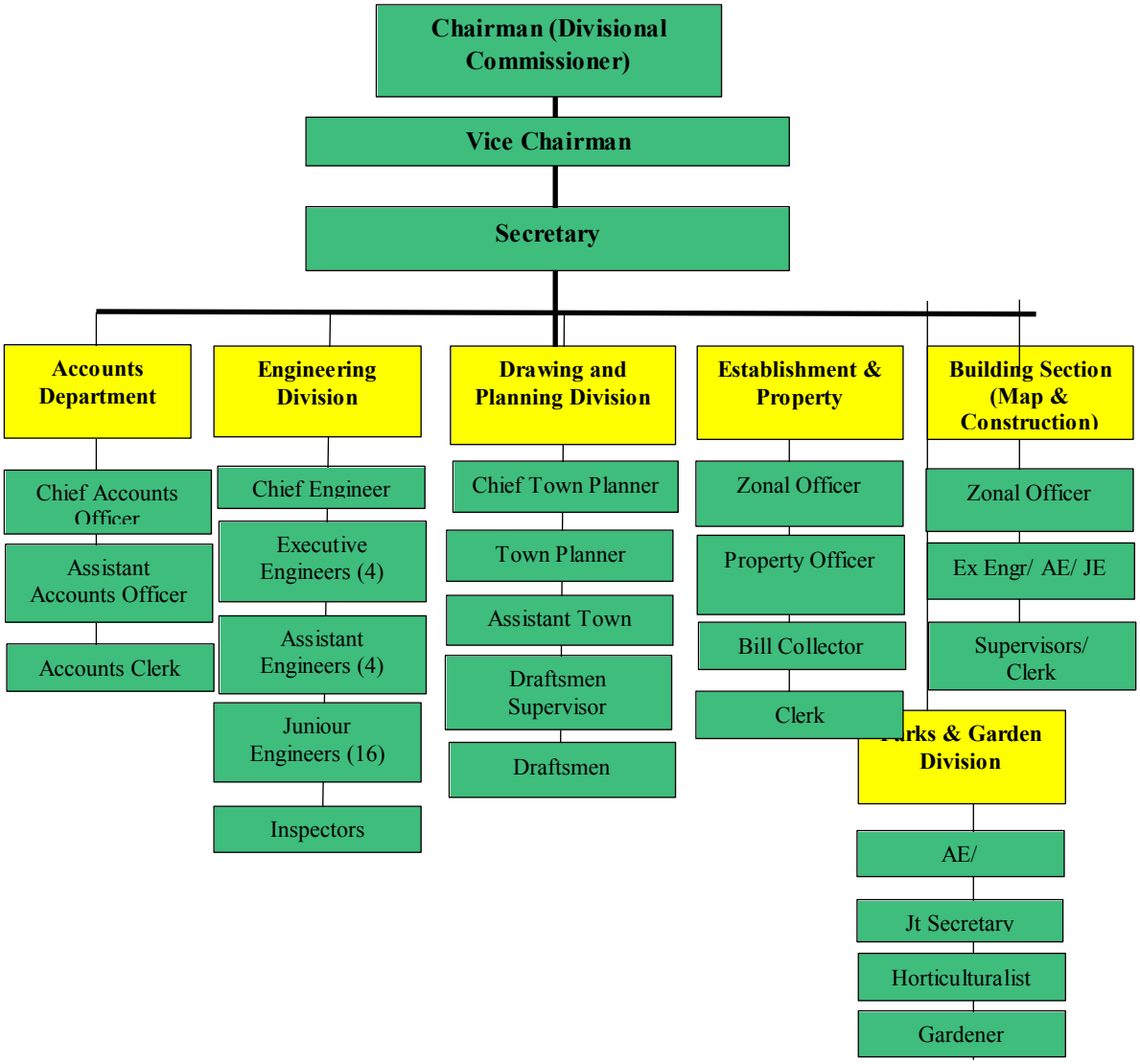
MCA was formed in 1960 under the UP Municipal Corporations Act of 1959. The organizational structure of the MCA separated into the 'Execution Wing' and the 'Elected Wing' is shown in *Figures 33 & 34*.

The functions of the MCA according to the UP Municipal Corporations Act of 1959 are executed through a number of departments. *Table 59* below details out the list of departments and their key functions.

15.3.2 Allahabad Development Authority

ADA was established in 1974 under clause 5 of the UP Urban Planning and Development Act of 1973 with responsibility for planning and development of the municipal area and the surrounding 8 km that included 466 villages. ADA is governed by a board of 8 officials headed by the Commissioner who is the Chairman of the Authority, followed by a Vice-Chairman. Other members on the board include the - Secretary (Urban Development Department), Secretary (Finance Department), District Magistrate, Municipal Commissioner (MCA), Chief Town and Country Planner (TCPD), Managing Director (JN), 4 municipal councilors and 2 to 3 nominated members (*Figure 35*).

Figure 35: Organisation Structure of ADA



ADA is actively involved in the development of residential colonies and also provides the infrastructure in these colonies as well as environmental services like construction of parks etc. The functions of the ADA include –

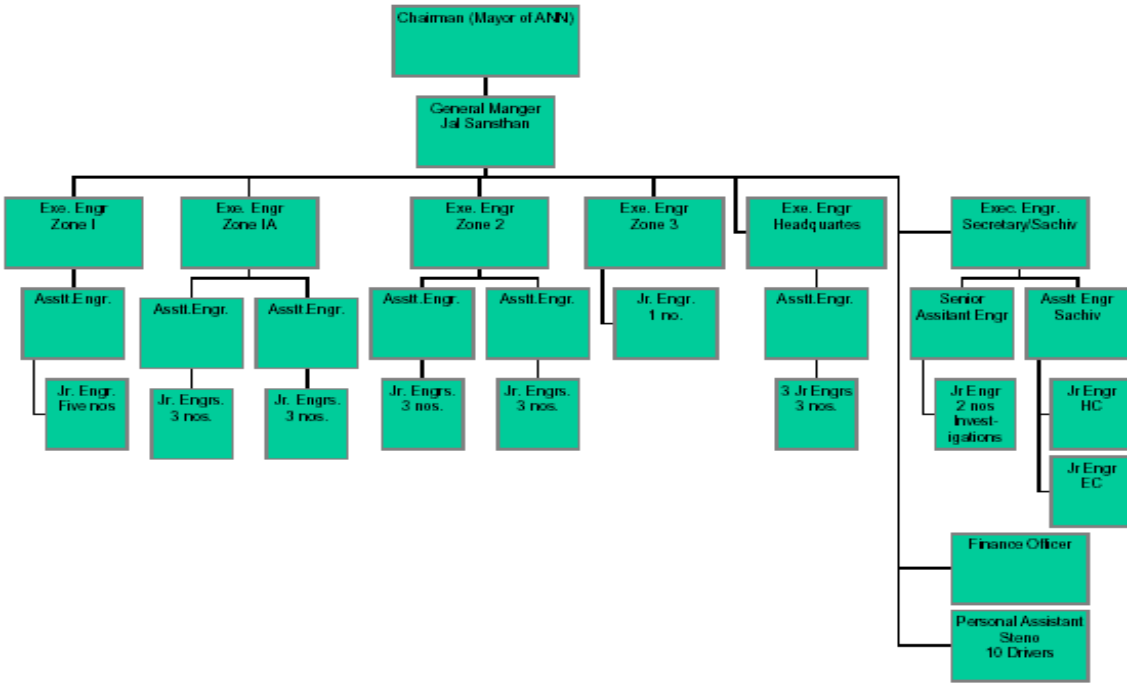
- Preparation of Master Plan and Zonal Development Plans for the city;
- Maintenance and improvement façade of certain buildings and abutting arterial roads;
- Acquisition, disposal and development of land;
- Construction of Housing (units/ colonies) to meet the housing demand of the growing population;
- Provision of infrastructure facilities (roads, sewers, water supply) as per the population needs; and
- Provision of bus stands outside the dense city pockets for proper transport infrastructure.

The ADA does not have a separate cell for handling complaints. All complaints have to be addressed to either the Joint Secretary or Secretary. Most of the complaints that ADA receives pertain to roads, water supply, street light maintenance etc. The ADA maintains an Asset Register and follows a system of double entry accounting.

15.3.3 Jal Sansthan

Jal Sansthan is responsible for O&M of water supply and sewerage systems installed and transferred to it by JN and other state level organisations like DUDA, ADA etc. Although the JS is legally a part of the MCA since 2002, in practice, the two organisations (MCA and JS) still operate independently and are technically separate entities. JS maintains independent accounts and has a separate revenue collection unit.

Figure 36: Organisation Structure of JS



The organisational structure of the JS is presented in *Figure 36*. A General Manager who is responsible for both water supply and sewerage management functions for the city heads the organisation but in practice, water supply receives greater attention than sewerage. JS has 1 General Manager, 4 Executive Engineers, 7 Assistant Engineers and 25 Junior Engineers and a large number of field staff.

The water supply wing is well developed with separate administration, finance, planning and construction, operation and maintenance divisions. However, for sewerage services, such a structure does not exist and this function is considered to be a minor function for most water supply engineers. The organisation has been engaged in sewerage management for quite a number of years and therefore has the technical capabilities and manpower to plan, develop and maintain such facilities. The infrastructure and equipment available with the organisation are quite old and not much addition of equipment has taken place during last few years.

JS regularly conducts media campaigns on storage practices and water pollution. It also has a 24-hour complaint cell that registers people's grievances.

Water Tax and water charge form the major source of revenue for AJS contributing to about 85% of the revenue in 2003-04. Sewer tax and charges form the major part of the remaining revenue contributing to around 7% of the total revenue. In the absence of water metering, both taxes are assessed as percentages of the annual rental value of residents' property. One of the major issues has been the problem in assessment of annual rental value and 5 – yearly re-assessment, which has not been practiced by MCA. This is leading to low revenue for the JS, whose charges are a fixed percentage of property tax. Further, they are also not allowed to increase the rates, mostly due to political pressure. The bulk of the revenues earned are spent on establishment and electricity charges accounting for an average of 40% and 36% of the total expenditure in 2003-04. Due to insufficient revenues AJS ends up with non-payment of electricity bills, which are finally paid by the UP State Government.

The current maintenance practices are reactive rather than preventive and routine as per manual. Most of the maintenance is carried out in response to customer complaints related to overflows etc. These problems are normally resolved by clearance of blockages in sewers, pipeline repairs against leakages etc. There is no evidence of a planned regime of cleaning or inspection of the system.

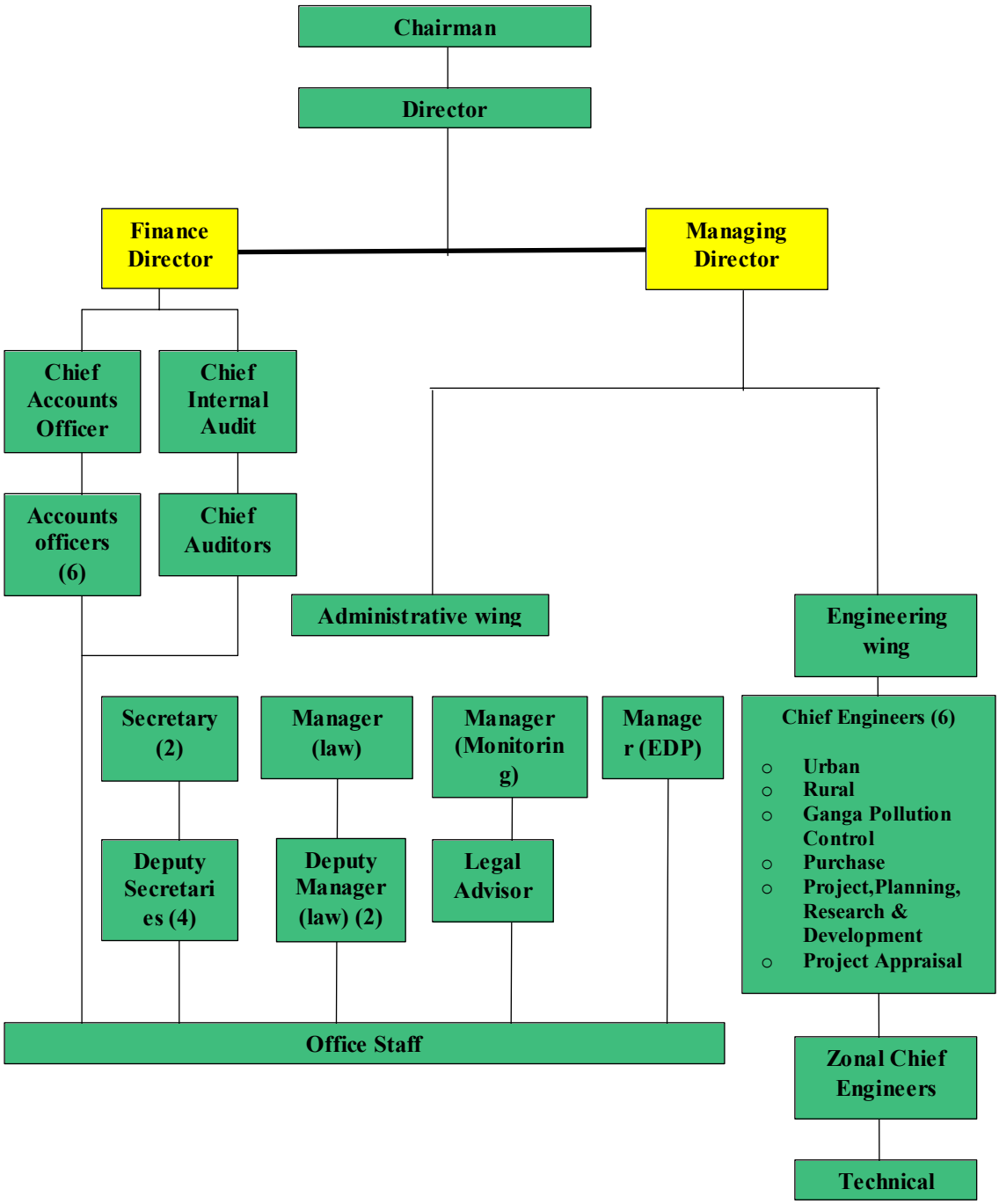
15.3.4 Jal Nigam

JN is a State Government organisation responsible for the management of water supply, sewerage and sewage treatment facilities. The main fixed assets of JN are the water works including own scheme's hand pumps. The sewage treatment works created under Ganga Action Plan are operated and maintained by JN. As per the UP Water Supply and Sewerage Act, 1975 the key functions of JN are –

- Preparation, execution, financing and promotion of schemes of water supply and sewerage and sewage disposal;
- To render necessary services in regards to water supply and sewerage to state government and ULB's and on request to private institutions;
- To prepare state plans for water supply, sewerage and drainage;
- To review and advise of tariff, taxes and charges on water supply;
- To access material requirements and arrange for their procurement;

- To establish state standards for water supply and sewerage services;
- To review annually the technical, financial, economic and other aspects of water supply and sewerage system of JS and ULB;
- To operate, run and maintain any waterworks and sewerage system on request by the state government;
- To access requirements of manpower and training in relation to water supply and sewerage services in the state; and
- To carry out applies research for efficient discharge of functions of MCA or JS.

Figure 37: Organisation Structure of JN



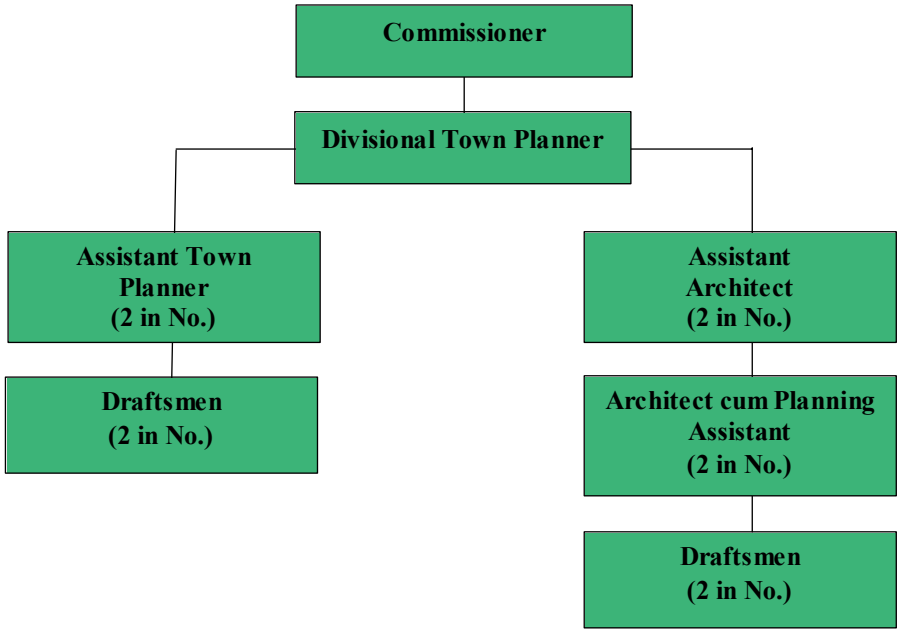
The Board of Directors at JN comprises of the Chairman (JN), Managing Director (JN), Finance Director (JN) as the permanent members. The nominated members on the board include the State Principal Secretary for Urban Development, State Principal Secretary for Planning, State Principal Secretary for Finance, State Principal Secretary for Rural Development, Director (Health and Medical) and Director (Local bodies). Other invitees are the Principal Secretary Public Enterprises Bureau and Secretary Water supply (Uttaranchal Government). The organisation structure of JN is given in *Figure 37*.

Current functioning of the JN displays a 'reactive' approach rather than a 'preventive' one. The JN has a Human Resource Development Cell that is in charge of specific public participation programmes. They conduct programmes for creating awareness regarding water conservation etc. and also conduct training programmes for capacity building of JN staff to undertake community participation related activities in their programmes. There is no separate complaint cell at JN. The Executive Engineer receives the complaints and forwards it to the respective department.

15.3.5 Town & Country Planning Department

Allahabad has a divisional office of the State TCPD. This office is responsible for the provision of various services in the city and is headed by the Commissioner. ADA and TCPD perform similar functions and the commissioner decides as to which of these department shall take up an assigned task. The Chief Town & Country Planner is the technical head next to the Commissioner. *Figure 38* explains the organisational set-up in detail.

Figure 38: Organisation Structure of TCP Department

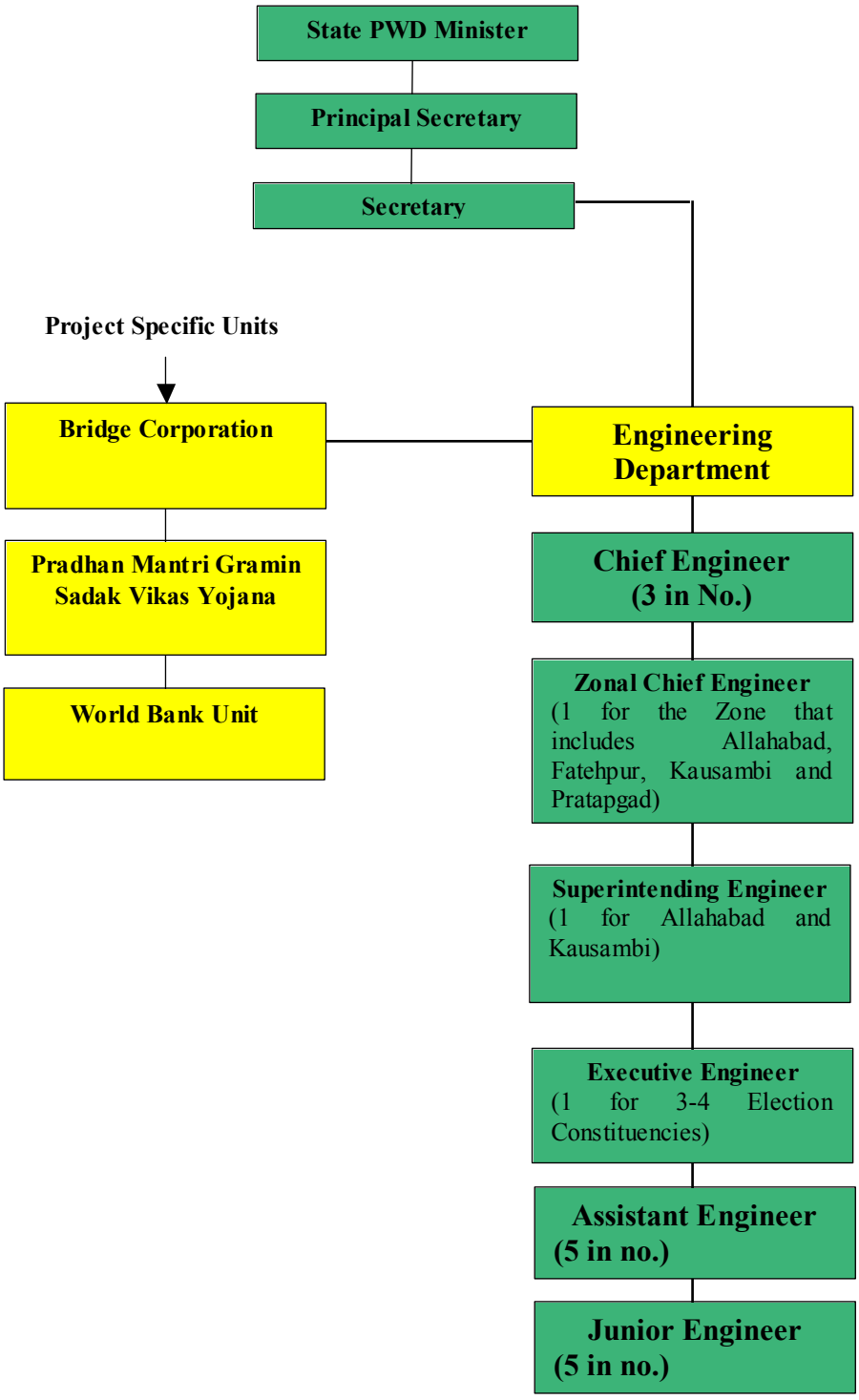


15.3.6 Public Works Department

The State PWD is primarily responsible for construction and maintenance of roads, state government institutions and state government housing in the city. The CPWD is responsible for the construction and maintenance of only central government buildings and institutions.

The organisation structure at PWD has been detailed out in *Figure 39*. PWD operates under the State PWD Minister and State-level Secretary and Principle Secretary. At the district level the Superintending Engineer heads either one or two districts. There is one Executive Engineers (Ex En) for every 3 to 4 election constituencies. Allahabad has around 11 constituencies and 4 Ex En's. The total administrative and technical staff up to the Junior Engineer level works out to be around 250 followed by a fleet of around 3000 workers and sub-staff in the entire state.

Figure 39: Organisation Structure of PWD



The PWD is responsible for the maintenance of the main city roads with the MCA responsible for the internal roads. There are no criteria for categorising the roads to be maintained by PWD or MCA. The DM assigns the responsibility to either of the departments based on the primacy of the road stretch. PWD has a better reputation over MCA in road maintenance.

PWD maintains a complaint cell. People usually post their complaints to the executive Engineer of their area, who forwards these complaints to the cell, from where they are passed on to the Assistant or Junior Engineer. PWD faces work overloads during the Kumbh festival on account of a large number of complaints received. This indicates lack of a pro-active maintenance strategy.

15.3.7 UP Avas Vikas Parishad

The UP Avas Vikas Parishad (AVP) is the nodal agency for housing in the state. It was established in April 1966 to work towards housing solutions. Besides housing projects it has diversified its activities to planning, designing, construction and development of almost all types of urban development projects through out the state. In addition, AVP plans and executes projects for the development of health and education. It is also handling new district head quarters projects with the execution of large number of schemes. AVP has constructed multi storied office buildings and commercial towers for its own and public use. Providing public facilities is also a priority function of AVP. It develops market areas and convenient shopping. AVP also indulges into housing for the shelter-less .It has constructed 8480 dwelling units under 'Aashraya Yojana' at different places.

The AVP is an autonomous and raises its own resources. With a budgetary turnover of about Rs. 3463 millions for year 2000-01, AVP has a very strong finance base. AVP has notified 137 cities for its activities in the state. It has acquired 13500 acres of land in 78 cities where housing schemes are being developed and Allahabad is one such city.

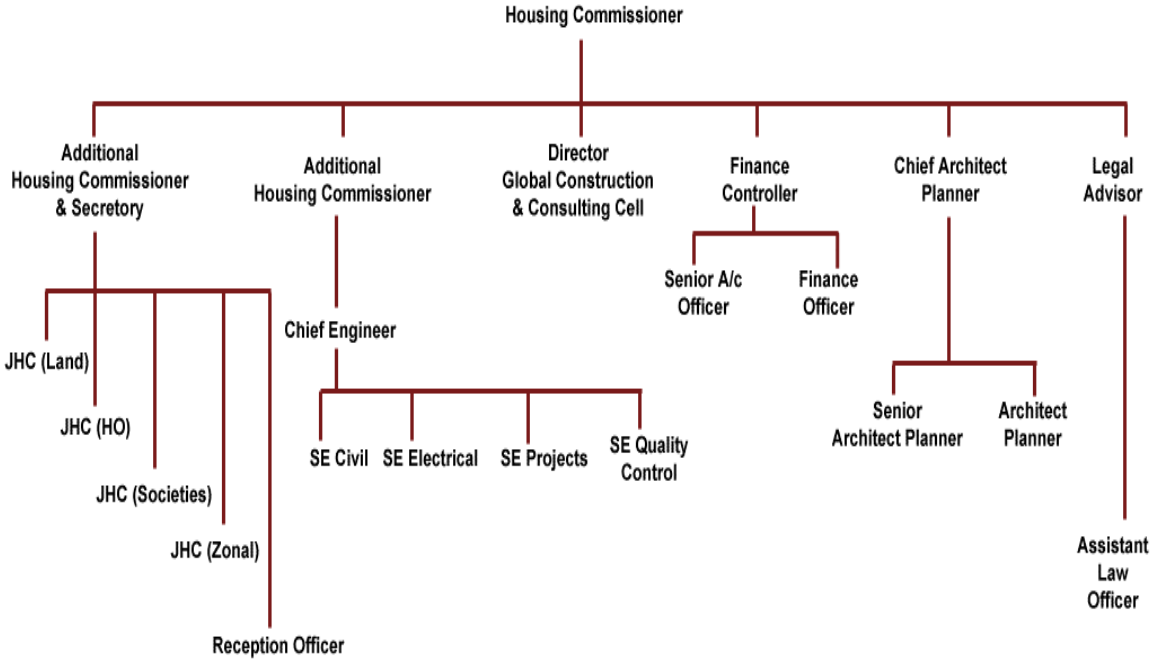
The Organsisation Structure of AVP is shown in *Figure 40*. AVP is a professionally managed organization with specialists working in different fields viz – Architecture, Town Planning, Construction Technology, Infrastructure Design, Execution and Maintenance, Estate and Financial Management etc. The AVP has an Engineering, and Architecture & Planning wing with the following staff (*Table 60*) –

Table 60: Staff Composition of AVP

Engineering Wing	
Chief Engineer	1
Superintending Engineers	9
Executive Engineers	54
Assistant Engineers	183
Architecture and Planning Wing	
Chief Architect Planner	1
Senior Architect Planner	1
Architect Planners	4
Assistant Arch. Planners	11

There are specific rules and regulations for all activities undertaken by the AVP board. All rules and regulations of the board are made public through Gazette notifications. To look into the difficulties of the allottees and landowners etc. a public Redressal systems known as 'Parishad Bandhu' is operating in Board since 1997. There is a face-to-face hearing and spot decision. This helps in prompt public redressal.

Figure 40: Organisation Structure of AVP



15.3.8 State Urban Development Authority

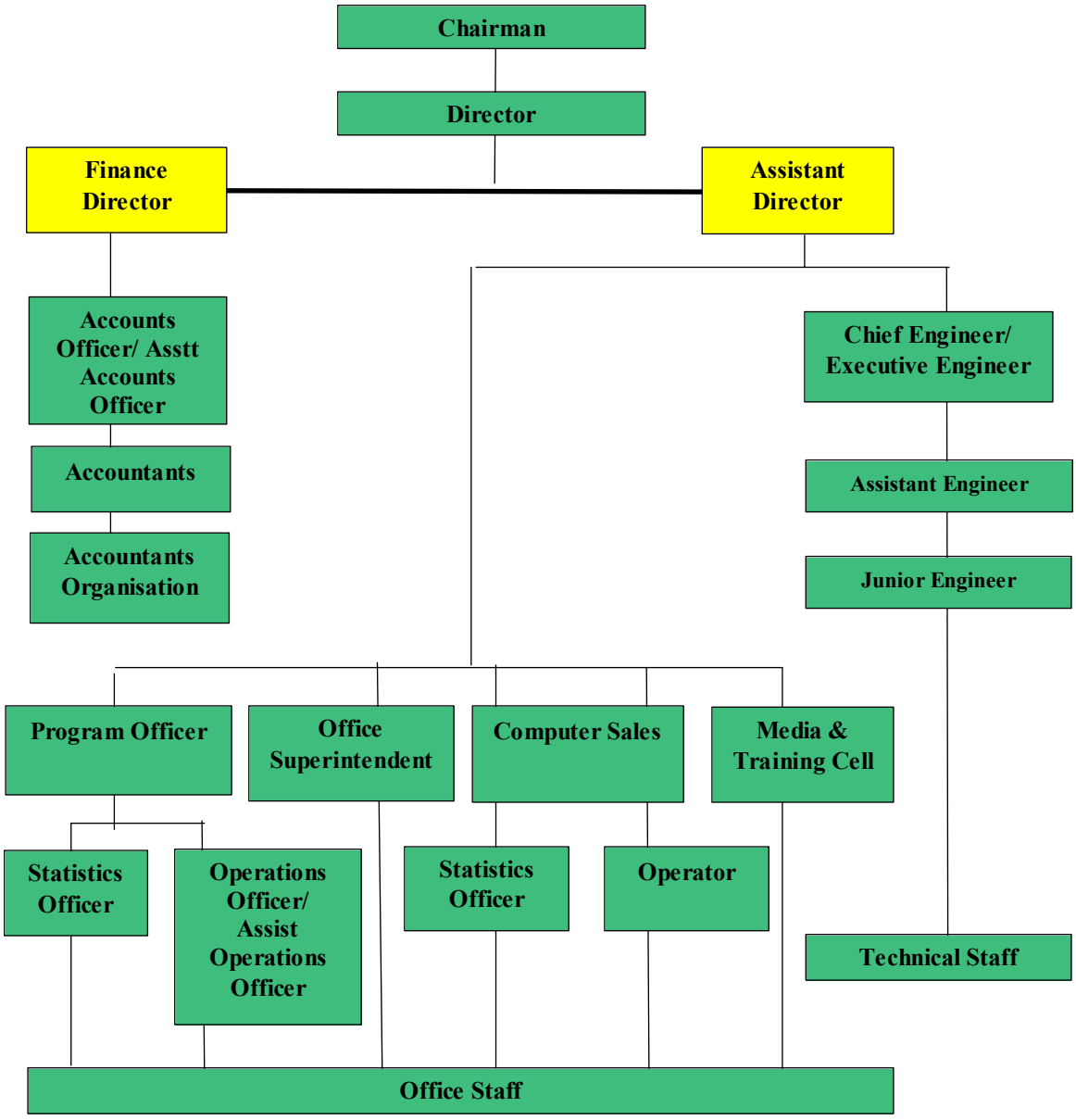
The institutional responsibility for slum improvement vests with the SUDA (*Figure 41*) that operates through a network of the District Urban Development Authorities (DUDA). SUDA executes various government schemes for urban renewal like – Balmiki Ambedkar Awas Yojana, Integrated Urban Slum Sewerage Plan, National Slum Development Program, and Golden Jubilee Urban Employment Scheme etc.

The State Secretary for Urban Employment and Poverty Alleviation is appointed as Chairman SUDA and is responsible for the acceptance and approval of all the schemes being implemented by SUDA. Other members in SUDA are Secretaries for Health, Education, Urban Development, Housing, Youth-development and Social Development. SUDA operates through a series of community structures like –

- Community Development Societies (CDSs) – (1350 in the state)
- Neighbourhood Committees (NHCs) – (10009 in the state)
- Neighbourhood Groups (NHGs) – (100963 in the state)

SUDA executes all its programs using beneficiaries for prioritization of needs and execution of schemes.

Figure 41: Organisation Structure of SUDA

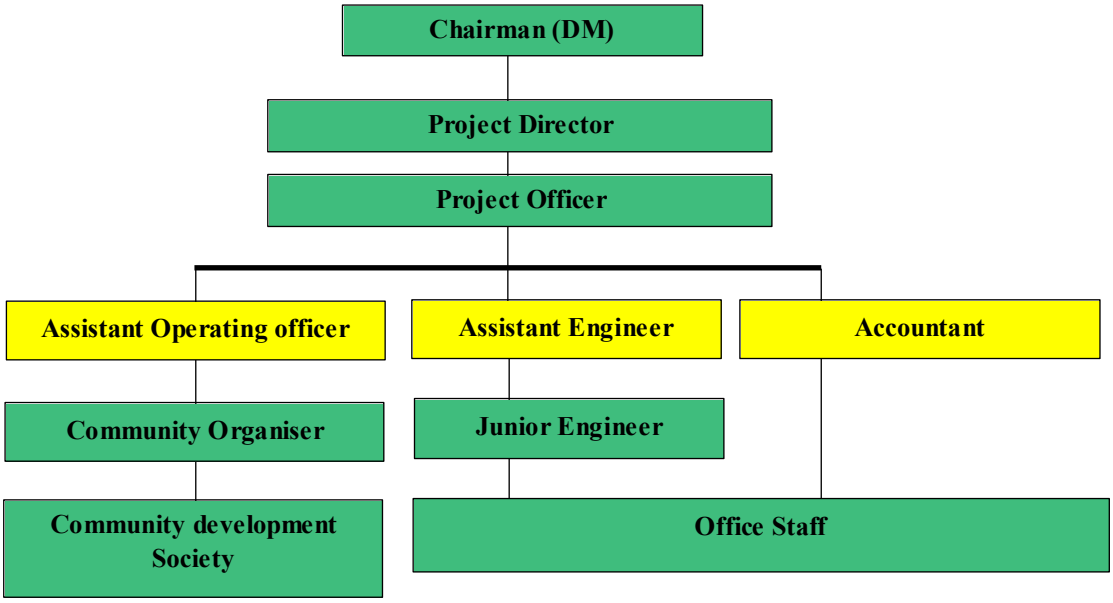


15.3.9 District Urban Development Authority

DUDA (*Figure 42*) has been constituted for effective execution of the SUDA undertakings in all the districts of the state. DUDA members include the DM or Chairman DUA, Municipal Commissioner as Vice Chairman DUDA and other district level officers. It is primarily responsible for works relating to community development, in the respective districts of the state, which includes development of slum communities, construction of community toilets, assistance in construction of household latrines, creation of awareness etc. They also work for provision of sewers, tube-wells etc in slum localities. The assets thus created are finally handed over to JS for maintenance purpose. DUDA has also taken up a series of activities for infrastructure improvement in slums.

DUDA coordinates with CDSs for community participation in various initiatives undertaken by DUDS in these communities.

Figure 42: Organisation Structure of DUDA



15.3.10 Other Institutions

Allahabad has some civil society organisations like the 'Allahabad Citizens Committee' constituted by the Allahabad High Court after a PIL by some citizens following a flood in the year 2000. The monitoring committee meets every month to review condition of civic amenities and accountability of the officials.

At present, there are no formal residents' associations in the city. Some areas of the city have informal associations where people come together around specific issues like solid waste management. Examples of these groups are few and those that exist are confined to areas of new development.

It is estimated that several hundred NGOs/ CBOs exist in the city. A few NGO's known in the city and working in the field of environment are listed in *Table 61* below:

The CBOs that exist in Allahabad have been constituted by DUDA in slum areas. These have a three-tier structure which comprises of –

- Community Development Societies (CDSs)
- Neighbourhood Committees (NHCs)
- Neighbourhood Groups (NHGs)

The CDSs or Samudai Vikas Samitis comprise 10 or more Neighbourhood Committees (NHCs) representing about 2500 families. These societies or samitis are created among communities to empower women in the decision-making. There are about 30 samitis in Allahabad. Typically, each samiti has 20 members, all of whom are women. Meetings are held every month and proposals for funding are presented to the Municipal Commissioner for possible financial support. These samitis also network with the Health Department of the Municipal Corporations and other urban development organizations. The duties attributable to the samitis include:

- Identification of beneficiaries;
- Preparation of community plans and mobilizing resources;
- Monitoring of repayment and recovery;

- Liaise with Governmental and non- governmental agencies; and
- Creation of community assets and maintenance of the same.

The NHCs comprise 10-12 Resident Community Volunteers (RCVs) representing about 250 families. They are responsible for identifying the local "problems", motivating the NHG and developing community-based credit thrift societies.

Table 61: NGOs & Their Areas of Expertise

Name of NGO	Areas of Expertise
Sulabh	Water and Sanitation Issues Hygiene promotion Environmental Health
CURE	Hygiene Promotion Environmental Health
Utthaan	Economic empowerment of Women's – encouraging formation of Self Help Groups and establishing small scale enterprises Micro Finance and Micro-credit Enhancing Livelihood means through promotion and marketing of local art and craft Training and Awareness programmes
Bharat Vikas Parishad	People's empowerment Community Development Rehabilitation and resettlement through participatory approaches Urban Land and Housing
Sewa Bharati	Women's Empowerment Community development Health of Women and Children (RCH)
Arthik Anusandhan Kendra	Environmental education Use of Renewable energy Afforestation Land and water management
Indian Institute for Development Studies and Research	Environmental education
Kailash Chandra Seva Ashram	Environmental education camps Tree planting
National Forum for Environmental Studies and Conservation (NESCO)	Conducting training workshop for teachers Participation for the UNEP sponsored campaign 'clean up the World' Environmental research and surveys Providing consultancy services Promoting afforestation and preservation of biodiversity
Vinoba Adarsh Shiksha Samiti	Environmental Education Providing safe drinking water in village Tree planting Taking steps to protects local wild animals and birds

The NHGs comprise of women from 10-40 households with a RCV as its head. They

facilitate the processes related to:

- Planning, implementation and monitoring of activities at the cluster level;
- Formation of credit and thrift society; and
- Collection of household data.

At present, there are no Ward Committees functional in Allahabad. Area representatives known as Ward Councilors are elected every 5 years and they represent citizens' voice. Opinions about the effectiveness of this system vary. People feel that the arrangement is not effective and councilors focus more on activities that further their own goals.

15.4 Overlap of Roles & Accountability

Within the MCA at the departmental level, there are functional overlaps; for example, both PWD and the Street Lighting departments are undertaking the construction and maintenance of streetlights and municipal properties; MCA as well as PWD clean drains; etc. These overlaps cost the MCA in terms of revenues as well as manpower and are often subject to problem arising from a lack of coordination – a situation that is not conducive to institutional efficiency.

The MCA faces a shortage of sanitation staff. The Public Health Department is responsible for cleanliness in 20 wards for which it has created posts for 2565 sweepers against which 2000 sweepers are currently in place. The numbers of sweepers available in the MCA and the PHE are way below the standards set in the Government Health Manual. The key issue is to decide on the trade offs between hiring full time staff versus outsourcing. The latter will mean that the liabilities of the MCA will be reduced but, experience of similar attempts in other municipalities have shown that outsourcing is difficult to implement both because of the legal aspects involved as well as the opposition from existing staff. While this is difficult to implement, the long term advantages of outsourcing definitely outweigh the initial teething troubles.

Despite the very large size of the MCA, all functions are performed out of the main office of the MCA. There is no decentralization in either the Execution or Elected Wings and therefore no Zonal Offices or Ward Committees. This centralized approach is not very amenable to efficient working.

The MCA has set up three cells to handle customer complaints. All complaints have to be made either in person or through regular post since the MCA does not have a system of online grievance handling. The length of time for registering complaints and their resolution is therefore quite long and could be a deterrent for customers.

Quite like the other development authorities, the ADA functions as the 'Developer to the Government'. Functional overlaps are seen between the ADA and the TCPD with both being responsible for spatial planning. Functional overlaps are also seen in the implementation and maintenance functions that are performed by both the ADA and the MCA. As a parastatal, the ADA is supposed to hand over sectors that have already been developed to the MCA for service provision and in order to ensure that levels of service are satisfactory, it needs to take the MCA into confidence while developing sectors. There is a possibility that sectors be developed in places where infrastructure is deficient.

The ADA is focusing on developing the outlying areas since the inner areas of the city are already developed. While planned development is taking place there is a high

possibility that this is encouraging unplanned growth with unauthorised colonies coming up through the conversion of designated agricultural land to residential use.

JS's cost recovery through user charges is inadequate compared to the cost of service delivery because of poor billing systems and low user charges. JS has poor coordination with the MCA and because of this, functional inefficiencies arise. JS is unable to rationalize user charges because of its lack of power in this connection. Levels of accountability in the JN are low because it is a state department.

This lack of accountability arises from a lack of role separation since the JN is responsible for both policy making for the sector as well as implementation of the policy – therefore regulation is non existent. Being a state department, its functioning is also subject to a high degree of political interference. Dependence on state budgets means that there are limited resources available for capital investment for preventive maintenance and its functioning is therefore more reactive.

The absence of criteria for classification of roads to be maintained by the MCA and the PWD is not an enabling framework for efficient functioning by either agency. As a corollary to the above, neither agency (MCA/ PWD) is able to plan its work in advance leading to a reactive mode of functioning.

The functions of the AVP, the ADA and the MCA are similar. All the three agencies are involved in planning and development of land for residential and commercial purposes. The linkages of these agencies with the TCPD is also indicative of overlaps.

15.5 System Deficiencies

Few prominent system deficiencies in ULBs/ parastatals are listed as follows:

- MCA, JS and JN show lack of sharing of common information and resources amongst each other;
- MCA and AJS are public service organisations but they work in isolation and do not interact much with public or call for their opinion in operational matters and development issues;
- All the organisations are primarily conducting breakdown maintenance work. Routine and preventive maintenance seems to be lacking;
- Most of these institutions spend 30-40% of their expenditure on manpower at worker level. Several activities of MCA and JS are similar and carried out separately;
- There are issues related to transfer and O&M of the assets created previously;
- As a check against depleting ground water table, JS has submitted a proposal of imposing a tax on boring in the city. However, the authorities have not taken any further action on this;
- Most of the institutions do not have proper asset records and no efforts have been initiated so far for asset inventory;
- MCA does not have any zonal offices and Ward Committees have not been constituted so far;
- Most of the institutions including ADA and MCA do not have any website. These organisations still depend a lot on paper work in the absence of computerisation and e-governance; and
- MCA is short of sanitation staff. Lack of manpower for sanitation services is leading to ineffective sanitation and solid waste facilities in the city.

15.6 Key Issues

The development of land surrounding the congruence (Sangam) of Ganga, Yamuna and Saraswati rivers confronts the institutional restriction that it falls under the cantonment area and is under the Ministry of Defence. This issue needs to be resolved for better utilization of the city's religious and tourism potentials.

- MCA collects Property Tax and JS collects Water Tax, Water Charge and Sewer Tax from the residents. Tax Collectors of both the departments visit the same household separately and the tax payer has to visit two different offices for payments or complaint redressal;
- JN has a local pollution control unit primarily formed for the execution of works under the Ganga Action Plan. At the conclusion of the project, all O&M was supposed to be transferred to the local body. However, this is not the case and the O& M of the STPs is a responsibility of JN;
- ADA uses JS water supply for housing development. An amount fixed up as certain percentage of cost of construction is paid by ADA to JS for this service. However, this payment often gets delayed adding to the financial problems of JS
- MCA shows several interdepartmental overlaps. These overlaps in the absence of co-ordination can lead to inefficient service delivery; and
- Inter institutional overlaps are common between- ADA and TCPD, JS and MCA, JN and JS, PWD and MCA, DUDA and JS etc.

16.0 Financial Profile & Credit Worthiness

16.1 Existing Practices

There is an increased role of urban government/ governance with increase in urban population. With advancement in science and technology, man's concept of minimum amenities for acceptable living conditions has undergone changes. It has now become utmost important to provide quality services to the urban dwellers in order to increase the competitiveness in the city and attract investment on a continuous basis.

Since the fiscal decentralization is in the early process of devolution in the state of UP, MCA is facing problems of poor financial status, absence of regular maintenance and high operating costs. Lack of capacity and capability of MCA to mobilize the resources due to undue pressure by the elected body would result in low investment for creation of new infrastructure.

State Finance Commission (SFC) is appointed by the State Government under Section 138-A of the Municipal Corporations (MC) *Adhiniyam*, 1959 to review the financial position of MCs. SFC is required 'to make recommendations relating to the distribution between State, Gram/ Kshetra/ ZPs and ULB of the net proceeds of taxes, duties, tolls and fees leviable by the State, which may be divided amongst them under Part IX and IX-A of the Constitution and the allocation between panchayats at all levels and ULBs of their respective shares of such proceeds' to give the recommendation about the distribution of taxes, duties, tolls and fees leviable which may be assigned to the MC, or the grants to MC from consolidated fund of the state. SFC suggests measures to MC to improve its financial position.

MCA like any other MC in India is not able to recover the cost of services rendered by it. There is big resource gap for performing the basic core functions like public health, sanitation, and waste management. In order to bridge the gap all the three tiers of the Government have to cooperate and work in this direction. The Mission is one of the initiatives by the Central Government for enhancing the service levels of ULB in the different cities of India.

MCA maintains records on single entry cash based system of accounting. The output of this cash basis of accounting is a Statement of Receipts and Payments that classifies cash receipts and cash payments under different heads. A statement of assets and liabilities is not prepared.

The adoption of cash basis of accounting by governmental entities owes its origin to the pre-eminence of budget as the principal means of financial control in the Government. In the case of Governments, the budget is a formal document setting forth the objects and purposes for which expenditure should be incurred during a period and the sources from which funds should be raised to meet such expenditures and receipts under various budget heads to facilitate a comparison of actual performance vis-à-vis budgeted targets. The cash basis of accounting fails to meet most of financial reporting objectives. The measurement of performance and financial position under the cash basis of accounting is unlikely to yield correct results, because the evaluation of performance requires the measurement of accomplishment (the revenues) during a period and the efforts expended for those accomplishments

(the expenses). In current scenario, the timings of cash receipts and cash payments may not coincide with earning of revenues or incurrence of expenses. Also, the measures of performance based on cash basis of accounting are respectable to alteration though a slight variation in the timings of cash receipts or payments e.g. a budgetary deficit can be cancelled merely by postponing the payment of certain bills by a few days. No distinction is made between expenditure on construction of infrastructural facilities such as roads, JSCs, MTVs, buildings of night shelters etc and expenditures on routine items such as salaries, rents etc. Similarly, a substantial expenditure an major changes to an asset that results in an increase in its life is treated under the cash basis of accounting as no different from the revenue expenditure on normal repairs and maintenance. Thus cash basis of accounting fails to meet most of the financial reporting objectives.

The accrual basis is the superior method of accounting for the economic resources of any organisation. It results in accounting measurement based on the substance of transactions and events, and thus enhances their relevance, neutrality, timelines, completeness and comparability. World wide, the use of accrual basis to the fullest extent practicable is recommended in the government environment

By not following the accrual system of accounting, MCA faces the following drawbacks:

- Not able to assess the accountability of all the resources that MCA controls and the deployment of those resources;
- Not able to assess the financial performance, financial position and cash flows of the entity;
- Cannot make decisions about providing resources for further capital projects to be undertaken by the MCA;
- Cannot evaluate MCA's ongoing ability to finance its activities and to meet its liability and commitment;
- Plan for future funding requirements of assets maintenance and replacement;
- Plan for the repayment of or satisfaction of existing liabilities;
- Manage its cash position and funding requirement;
- Demonstrate its performance in terms of service costs, efficiency and accomplishments;
- Assess whether current revenues are sufficient to cover the costs of current programs and services;
- Record the total costs, including depreciation of physical assets and amortization of intangible assets, of carrying out specific activities;
- Assess whether it can provide and the extent to which it can afford new programs and services.

For better financial management of any organization, information of overall financial position of the entity and current assets and liabilities and changes in financial position is necessary prerequisite.

MCA accounts of receipts and expenditure shall be maintained in such a manner as prescribed as per Section 142 of MC *Adhiniyam*, 1959. There is no mandatory provision for the maintenance of accounts on double entry accrual based system of

accounting as per Municipal Act. Recently great development has taken place in all over the country in this regard. UP Government has issued an order for switching over the accounts from single entry to Double entry accrual based system.

16.2 Finances of MCA

Receipts of MCA comprise of own sources (Tax & Non Tax revenues) and grants from the state Government. Capital receipts comprises loan from the government and revenues earned from sale of land and grants received on account of MP and MLA funds (*Figure 43; Annex 4*).

Figure 43: Trend in Revenue Receipts

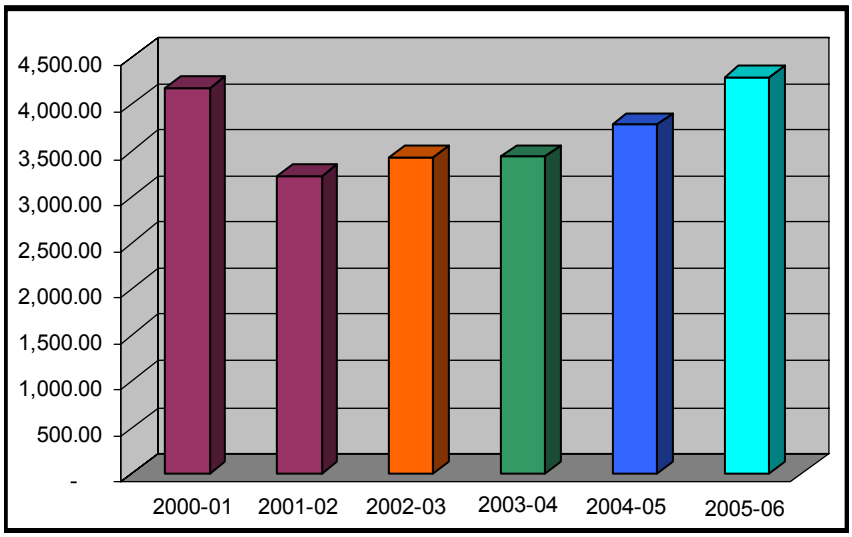
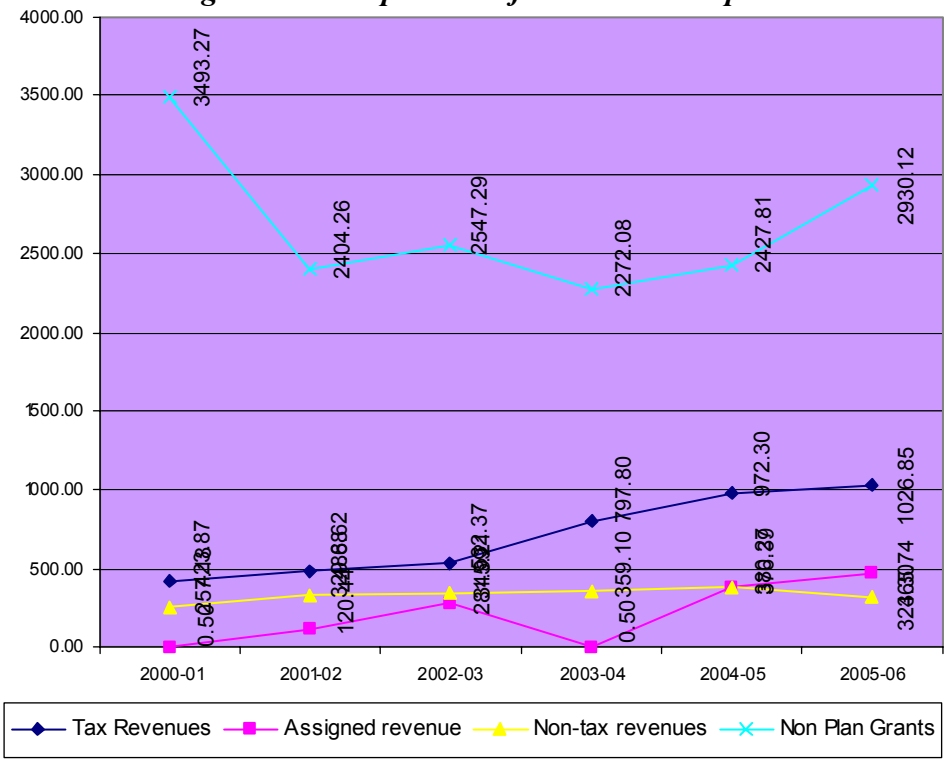


Figure 44: Composition of Revenue Receipts



There is increasing trend in MCA as far as revenue from sources is concerned. There is increase in tax revenue percentage from 10.15% in 2000-01 to 23.29% and also non-tax revenue percentage is also increased from 0.01% to 9.02% (*Figure 44; Annex 5*).

MCA shows an increasing trend in Tax Collection Efficiency in the past five years from 69.96% in 2000-01 to 72.26% in 2004-05. This could be the result of regular monitoring of tax collected by individual tax collectors against identified targets.

The revenue expenditure comprises salary expenditure and non-salary expenditures comprising expenses on service provision by MCA (*Figure 45; Annex 6*). Capital expenditure consists of repayment of loans. Establishment costs and normal maintenance expenses can be met out of owned revenue sources of MCA. The main striking feature is that the salary expenditures takes away almost 60% of total expenditure (Kapra Municipality, Andhra Pradesh) establishment costs is 5% of total expenditure (*Figures 46-47; Annex 6*).

Figure 45: Trend in Revenue Expenditure

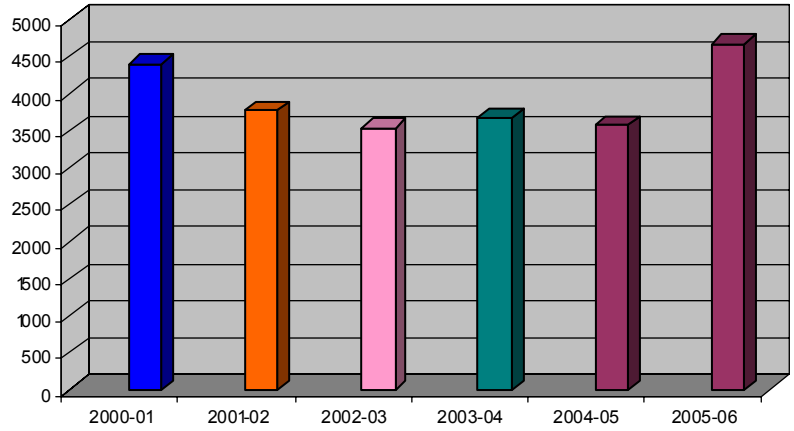


Figure 46: Composition of Revenue Expenditure

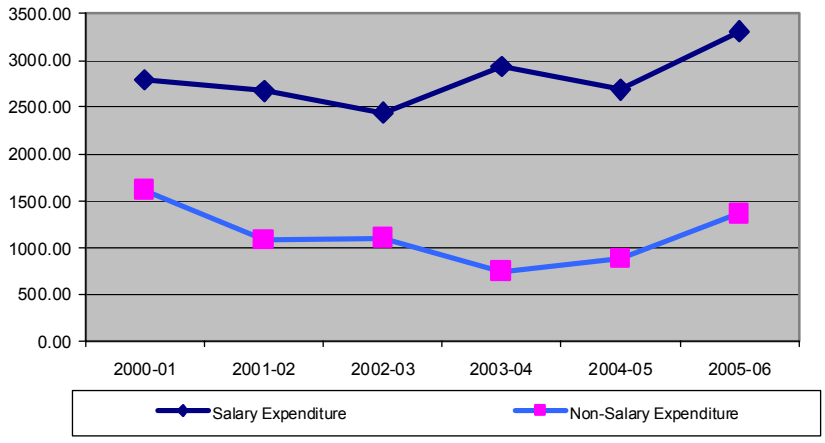
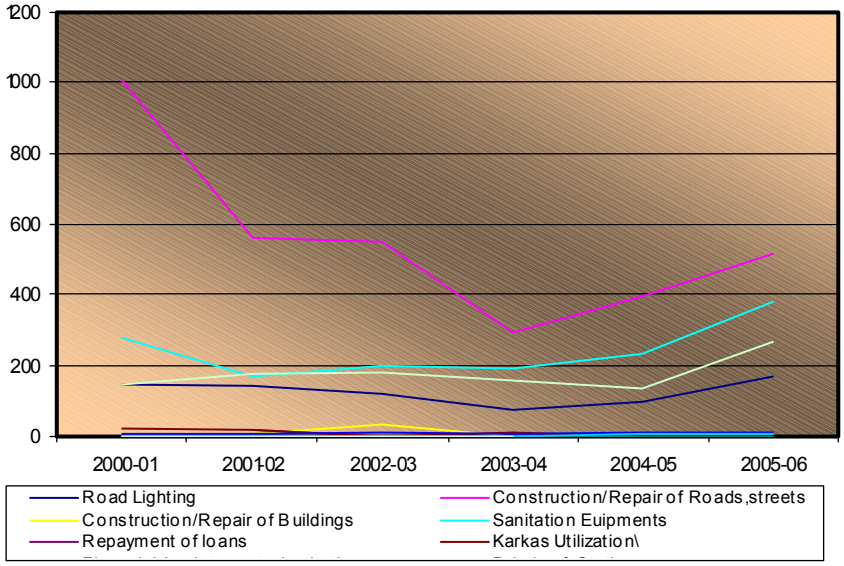


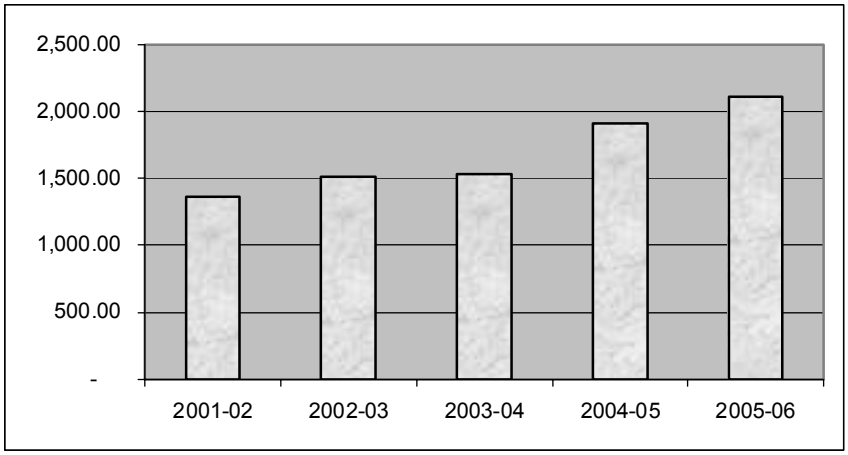
Figure 47: Composition of Non-Salary Expenditure



16.3 Finances for Water Supply & Sewerage

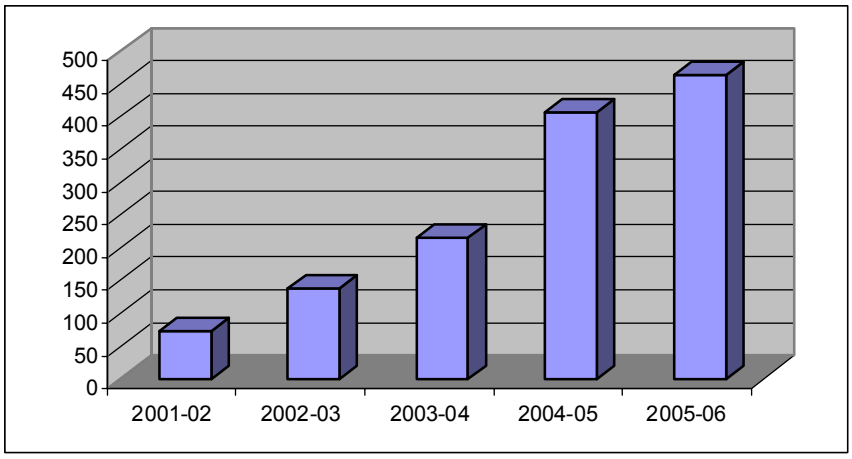
Water Tax and Water Charge form the major source of revenue for JS contributing to about 85% of the revenue in 2003-04 (*Figure 48*). Sewer tax and charges form the major part of the remaining revenue contributing to around 7% of the total revenue. In the absence of water metering, both taxes are assessed on percentages of the annual rental value of residents' property. One of the major issues has been the problem in assessment of annual rental value and 5-yearly reassessment, which has not been practiced by MCA. This is leading to low revenue for the JS, whose charges are a fixed percentage of property tax. Further, they are also not allowed to increase the rates, mostly due to political pressure.

Figure 48: Trend in Revenue Receipts



The major expenditure heads of JS are establishment and electricity charges accounting for an average of 40% and 36% of the total expenditure in 2003-04. Due to insufficient revenues JS ends up with non-payment of electricity bills, which are finally paid by the UP State Government. There is an increasing trend in incurrence of capital expenditure by JS (*Figure 49*).

Figure 49: Trend in Capital Expenditure



16.4 Key Issues to Consider in the Plan

- Proper maintenance of records of assets etc
- Financial reforms – mandatory and optional
- Double entry system
- Property tax collection reforms
- Other taxes – water, shops, cycle stands, coaching centres, marriage halls
- Public private participation and outsourcing of works

17.0 SWOT Analysis into Service Delivery

17.1 City Level An initiative has been taken to identify the strengths, weaknesses, opportunities and threats faced by the city. It is an attempt to utilize its potential and overcome the problems of the city.

17.1.1 Strengths

i) High level of connectivity by road railway;
ii) Rich cultural and religious heritage for conservation together with tourism potential;
iii) Established educational centre – Allahabad University, IIIT, MNRNIT and many other private and upcoming institutions;
iv) State level institutions and centre of power eversince the British period;
v) Part of the city is planned and reasonably clean;
vi) Densities are not too high;
vii) Abundace of surface water;
viii) Groundwater situation is good too; and
ix) There is good potential for water transport.

17.1.2 Weaknesses

i) Feeble urban infrastructure;
ii) Existing water supply system is quite old - > 100 years;
iii) High dependency on groundwater – 70%;
iv) Inefficient functioning of major institutions;
v) Drainage network not available;
vi) Serious water logging problems during rainy season;
vii) Lack of sewerage network in most of the localities;
viii) Lack of tourist facilities;
ix) Negligence of *Kumbh* area and other tourist spots;
x) Buildings of heritage and historal value ill-maintained;
xi) Lack of recreational areas and facilities; and
xii) No provision of public transportation.

17.1.3 Opportunities

i) Emergence of urban sprawls of Naini, Jhusi and Phaphamau that can cater to the growth of parent city;
ii) Immense presence of educational facilities/ institutions that can be exploited;
iii) Untapped tourism resources/ potential;
iv) Potential for Riverfront development;
v) Water based transport;
vi) Agro based industrial development can be possible; and
vii) High potential for IT Park.

17.1.4 Threats

i) Unchecked growth of squatter settlements – ~30% of the total population;
ii) High floating population leading to stress on the city's infrastructure;
iii) Poor rate of provision of facilities;
iv) Groundwater extensively used for drinking;
v) Increase in air, noise and water pollution levels;
vi) Flood susceptibility due to absence of drainage network and large number of low lying localities;

vii) Deterioration of heritage buildings due to lack of maintenance;
viii) Disposal of large untreated sewage into river water bodies;
ix) Water bodies/ ponds are drying up; and
x) Unplanned development in residential areas.

17.2 Institution Level

This section is aimed at analysing strengths, weaknesses, opportunities and threats (SWOT) faced by the various government, parastatal and other concerned agencies in the city regarding services delivery, operation and maintenance etc. For the purpose of this analysis, MCA, JS and JN have been taken into account.

17.2.1 Strengths

i) Strong technical setup and expertise with experience personnel (civil and environmental engineers);
ii) Sufficient manpower – technical and non-technical;
iii) There is increasing trend in MCA as far as revenue from sources is concerned;
iv) MCA has shown an increase in the trend of tax collection efficiency over the past five years;
v) Water tax and water charge form the major source of revenue for JS contributing 85% of the revenue;
vi) Sewer tax and charges form the major part of the remaining revenue for JS;
vii) Ganga pollution unit to execute sewerage work – design, execution, transportation and treatment;
viii) Existing laboratory setup; and
ix) Human Resource Development cell existing to conduct periodic training to improve technical skills and know-how on current technology.

17.2.2 Weaknesses

i) There is no provision of water metering and water charges are not raised due to political pressures which result in low revenue for the JS;
ii) Due to insufficient revenues JS ends up with non-payment of electricity bills, which are finally paid by the state government;
iii) Poor financial status of MCA, JS and absence of regular maintenance and high operating costs;
iv) No distinction is made between expenditure on construction of infrastructural facilities such as roads, JSCs, MTVs, night shelters etc. and expenditures on routine items such as salaries, rents etc;
v) Big resource gap for performing basic core functions like public health, sanitation, and waste management;
vi) Finance records area maintained on single entry cash based system;
vii) Statement of assets and liabilities not prepared;
viii) Cannot assess the accountability of all the resources that MCA controls and the deployment of those resources;
ix) Not able to assess the financial performance, financial position and cash flows of the entity;
x) Partial coverage of city by sewerage network;
i) Complete dependence on government funded projects;
ii) Poor resource management;
iii) Poor personnel management; and
iv) Lack of willingness.

17.2.3 Opportunities

i) Increased role of urban governance with increase in urban population;
ii) Challenge of providing quality services to urban dwellers in order to attract investment on a continuous basis;
iii) Challenge of switching over from cash to accrual system of accounting;
iv) Sufficient manpower at disposal;
v) Sufficient infrastructure (machinery & equipment); and
vi) Established institutional setup.

17.2.4 Threats

i) MCA is not able to recover the cost of services rendered by it;
ii) Striking feature of MCA accounts is that the salary expenditures take away major portion of the total expenditure;
iii) Stagnation and lack of growth opportunities for personnel; and
iv) Loss of technical skill due to stagnation and poor utilisation.

17.3 Key Issues

- Provision of basic services to the urban poor and ensuing delivery of other already existing services;
- Urban reforms (mandatory and optional) at city and state levels for improved governance and financial strength;
- Governance/ e-governance through application of GIS and MIS
- Accrual based double entry system of accounting;
- Property tax collection reforms through use of GIS; and
- Reforms relating to public private participation.

18.0 Critical Assessment of Development Challenges & Resource Requirements

The main thrust of the strategy of urban renewal is to ensure improvement in urban governance so that the ULBs and parastatal agencies become financially sound with enhanced credit rating and ability to access market capital for undertaking new programmes and expansion of services. With this improvement, public-private partnership (PPP) for various services would become feasible. To achieve this objective, the state government, the ULBs and parastatal agencies in the city will be required to accept and implement the proposed reforms – both mandatory and optional. This section focuses on critically assessing the development challenges faced with Allahabad.

18.1 Short-term Challenges

i) Poor service delivery;
ii) Damages and leakages in the existing water supply and sewerage networks;
iii) Inadequacy of the schemes;
iv) Large extent of enchroachments – shops extensions, police post, transformers and other electrical equipment;
v) Extensive slum population to take care mostly through *in-situ* schemes;
vi) Highways cutting across the city with through traffic;
vii) Parking lots area scarce;
viii) Wholesale markets and other higher commercial activities operates from the core of the old city;
ix) No records about the existing networks;
x) No separate storm water drainage system available;
xi) Water logging in several low lying areas during rains;
xii) Poor solid waste management system in practice;
xiii) Poor O&M of utilities/ assets;
xiv) Poor management of resources;
xv) Land and assets records not up-to-date;
xvi) Information upkeep is obsolete and retrieval time taking;
xvii) Property and taxation records incomplete, mis-assessed and misleading;
xviii) Urban planning function with ADA to be transferred to MCA;
xix) Private partnership schemes to be encourages; and
xx) Internet based public grievances addressal system *Lok Vani* to be implemented.

18.2 Medium term Challenges

i) Enchroachments to be removed. Electrical installations to be moved;
ii) Slum population to be rehabilitated by way of *in-situ and ex-situ* schemes;
iii) City bypasses to be in palce to avoid the through traffic;
iv) Multi-level (manual/ mechanised) parking to be in place at convenient locations to be operated by private parties (BOO/ BOT basis);
v) Wholesale markets and other higher commercial activities to be moved out of the congested areas to new identified locations;
vi) Preparation of directory of assets and works of MCA – workshop, health, PWD to be available on the net – website for all such records;
vii) Click of a button retrieval of all relevant information for effective governance and transparency;
viii) GIS/ MIS for property database and other records;

ix) Updation of property records with re-assessment and bringing more properties under property tax net;
x) Activities such as commercial (shops), parking/ cycle stands, coaching centres, other such activities to be made chargeable;
xi) Marriage halls/ community halls to be made revenue earners;
xii) O&M of the augmented/ new network systems;
xiii) Optimised use of surface water and groundwater sources for sustained usage;
xiv) PPP in SWM shall hazard free and yield positive results
xxi) Urban planning to be function vested with MCA;
xxii) Training and capacity building for all staff for increasing efficiency;
xxiii) PPP in identified sectors for cost recovery and delivery efficiency; and
xxiv) Internet based public grievances addressal system *Lok Vani* to be in place.

18.3 Long term Challenges

i) New enchroachments to be vouched for;
ii) Slum population to be allowed to grow. All city and OGs to grow in a planned manner;
iii) Bypasses to take care of all through traffic;
iv) Multi-level (manual/ mechanised) parking at convenient locations on BOO/ BOT basis;
v) Wholesale markets and other higher commercial activities to grow at relocated locations;
vi) O&M and effective use of directory of assets and works of MCA – workshop, health, PWD to be available on the net – website for all such records;
vii) Click of a button retrieval of all relevant information for effective governance and transparency;
viii) An operational GIS/ MIS for property database and other records;
ix) Updation of property records with re-assessment and bringing more properties under property tax net;
x) Activities such as commercial (shops), parking/ cycle stands, coaching centres, other such activities to be made chargeable;
xi) Marriage halls/ community halls to be made revenue earners;
xii) O&M of the augmented/ new network systems;
xiii) Optimised use of surface water and groundwater sources for sustained usage;
xiv) PPP in SWM shall hazard free and yield positive results
xv) Urban planning to be function vested with MCA;
xvi) Training and capacity building for all staff for increasing efficiency;
xvii) PPP in identified sectors for cost recovery and delivery efficiency; and
xviii) *Lok Vani* to be made effective and popular.

18.4 Key Issues

- Optimum utilisation of existing infrastructure;
- Demand based utility plans/ schemes;
- PPP in SWM and multi-level parking activities;
- Prioritised and phased implementation;
- Efficient O&M mechanism;
- Involvement of private players (engineering consultants) in DPRs and other such schemes;
- Governance/ e-governance through application of GIS and MIS
- Effective transfer of roles/ responsibilities as per the 74th CAA;