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1

Introduction

1.1 Background

The City Development Plan (CDP) for Lucknow has been prepared within the overall context of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), the Government of India's umbrella programme that aims at creating economically productive, efficient, equitable and responsive cities.¹

Feedback Ventures (P) Limited, New Delhi served as Consultants for the drafting of the CDP, and were contracted by the Water and Sanitation Programme (WSP) – South Asia, which was requested by the Government of Uttar Pradesh to assist the formulation of the CDP for Lucknow. The Terms of Reference are included as *Annex 1*.

In line with the JNNURM, the CDP considers current reality and challenges, and outlines priorities around the city's infrastructure needs and reforms required to empower local institutions as per the 74th Constitutional Amendment Act, 1992. Guided by the JNNURM, the reform agenda deals with issues such as legal, institutional and financial systems, accounting processes, universal access to quality urban services, inner city development and security of tenure.

As a State Capital, Lucknow qualifies for support under the Mission. Significantly, however, it also meets two other major JNNURM criteria – it has more than a million residents and has a rich cultural and historical heritage.

The preparation of the CDP is Lucknow's first step towards accessing grant assistance under JNNURM, for urban development activities specified under the two Sub-Missions. As immediate next steps, Lucknow will prepare project proposals and draw up a time-line for implementing the specified mandatory and optional urban sector reforms. The State and City authorities see the CDP as a start – a living document that will continue to be updated and refined in consultation with stakeholders.

The JNNURM

The Government of India launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005-06. The programme is based on the premise that for cities to work, it is essential to create incentives and support for urban reforms at the state and city level, develop appropriate enabling frameworks, enhance the creditworthiness of municipal governments, and integrate service delivery for the urban poor with the overall city level service delivery system. The programme is also designed to facilitate private sector participation in service delivery & management & in implementing the reform agenda, provides for participation of business, industry, civic groups and communities in local decision-making. The programme comprises two Sub-Missions, viz., Sub-Mission for Urban Infrastructure and Governance, and Sub-Mission for Basic Services to the Urban Poor.

JNNURM requires cities to prepare City Development Plans, as a perspective and a vision for their future development.. CDPs should be formulated through participatory processes that involve key city stakeholders, and should present the current stage of development of the city, set out the directions of change, identify thrust areas, suggest alternative strategies and interventions for bringing about the change. The CDP framework and vision should guide projects to be identified and implemented, and establish a logical and consistent framework for evaluation of investment decisions. Further, it should provide a basis for cities to undertake urban sector reforms at state and city levels that help direct investment into city-based infrastructure.

1.2 Preparation of CDP for Lucknow

1.2.1 Approach

In line with the JNNURM guidelines, the CDP presents the current status of the City's infrastructure, and sets out a city vision, strategies and programmes to achieve the sector milestones and goals linked to the vision. Its reform agenda aims to enable the city to attract investment into sustainable infrastructure projects, and its investment plan provides an estimate of sector investment requirements. Subject to agreement with the GoI, the plan is envisaged to provide the platform for specific Detailed Projects Reports (DPRs). The Plan identifies potential funding sources and investments for select projects, develops project strategies, and outlines plans for undertaking urban sector reforms at the state and city level. In addition to the JNNURM considerations, the CDP provides a broader development outline and the JNNURM is not intended to be the sole source of funding of city development. Aside from public resources, the reforms and revenue measures planned will aim to improve the planning and management capacity as well as the creditworthiness of the city, and hence its ability to access private finance and expertise in support of infrastructure and service delivery.

The overall approach for the development of the CDP entailed the following key elements:

- Assessing and analysing secondary information to understand current conditions, trends and issues.
- Ensuring broad-based participation of key stakeholders within government and civil society.
- Identifying a vision for the city and developing specific goals that link city development with poverty reduction and sustainability.
- Ensuring goals and implementation strategies are realistic, take cognisance of likely availability of resources and demonstrate worthwhile results within clear timeframes.

1.2.2 Consultation Process

The CDP was developed through a consultative and participatory process. At every stage efforts have been made to make the consultations inclusive of a wide range of stakeholders. Details of the consultations are presented in **Annex 2**. In broad terms it entailed:

- Four Consultations were held jointly with Government, NGOs, and Civil Society. These included discussions with the various departments involved in the CDP process, the NGOs and Civil Society groups that are active in Lucknow. These interactions were deliberately broad based to impress on participants the inter linkages between activities and outcomes.
- Further consultations were held with specific groups of opinion makers, including former elected representatives¹, business leaders and NGOs that were working with the urban poor.
- Consultations were held with the different technical departments of the government, including several individual and joint sessions while the investment plan was being finalized.
- Eight focus group discussions were held with residents in slum areas, involving more than 300 people selected on the advice of experienced development experts and NGOs.
- The process has received extensive press coverage both in the English and vernacular media and the Lucknow Nagar Nigam released a public announcement through the press (June 16, 2006), seeking citizens' participation and specific inputs.

¹ At the time of the process, Lucknow did not have an elected city government due to a judicial probe, but was preparing for elections.

1.2.3 Phases of the CDP Development

The CDP development process was structured in four phases: reconnaissance, visioning, strategy formulation and CDP development..

Reconnaissance Phase (1 May to 25 May)

A start off meeting was held in Lucknow on 28 April 2006, attended by officials of Lucknow Nagar Nigam (LNN), Urban Development Department (UDD) and several other agencies concerned with urban infrastructure and services in the city. This was followed by a one-day consultation workshop on 15 May 2006 that included the stakeholders listed in **Annex 3**, with the purpose of mapping out the process, generate ‘ownership’ and take their concerns and views on board.

Purpose of consultations

- Initial interactions
- Explanation of process
- Generate ownership of process
- Identification of initial thoughts of stakeholders on areas of concern

A Rapid City Assessment was undertaken to get an understanding of current levels of service, financing mechanisms and institutional arrangements. This assessment was carried out at two levels: checklist-based interviews and meetings with select functionaries, departments and community focus groups, and desk research of available secondary data and information on urban management and service delivery.

Visioning Phase (26 May to 20 June)

Intersecting with the Reconnaissance phase, this phase included the finalisation of the Rapid City Assessment through structured individual/group consultations (**Annex 4**), with stakeholders and finalisation of the vision for development of Lucknow.

Consultations for Vision

- Seeking concurrence on key issues identified in Rapid City Assessment
- Identification of Vision for city
- Identification of priority sectors for interventions

A “Visioning Workshop” on 13 June helped formulate a collective Vision for the city and the different sectors. Strategies and priorities for each sector, linked to the mandatory and optional reforms under JNNURM and investment plans.

Strategy Development Phase (21 June to 10 July)

Follow up meetings and interactions post the Visioning Phase enabled further refining of the vision, identifying the roadblocks and understanding ways to overcome them and led to the development of specific sector strategies. The strategy defined project priorities, funding investment requirements, responsibilities, and ways of addressing practical and institutional constraints.

CDP Formulation Phase (11 July to 8 August)

The final phase of the CDP comprised the following steps:

- Finalizing a list of priority action plans and strategies, in consultation with stakeholders.
- Formulating a City Investment Plan (CIP) – a multi-year scheduling of identified and prioritized investments, by sector and phased over a period of six years.
- Identifying financing obstacles and options – Lucknow, as a category B city under JNNURM, is expected to supplement funding from the Central Government with state and other funding, including reforms to position the city for access to capital markets over time. The full

complexity of these issues was beyond the confines of a CDP, but the intention was to provide some pointers to future directions and explore available options in the CDP.

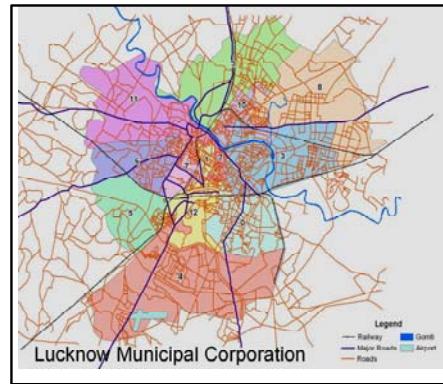
- Identifying and considering the need and scope for different delivery options, such as public sector delivery, utility reform, public-private partnerships and community contracting.
- A series of consultations and meetings to obtain and debate departmental proposals and refine the CIP, including providing material for a meeting of the Ministry of Urban Development with the Chief Minister on CDPs in the state.
- This CDP is a ‘working document’ for the State Government and will be used and updated as implementation proceeds. Government will consult various stakeholder groups periodically on implementation plans, progress and outcomes.

2

Lucknow City Profile

2.1 Introduction

Lucknow is the capital of India's most populous state, Uttar Pradesh and is situated about 500 km southeast of New Delhi in the heart of the state. The City has a humid subtropical climate with a cool dry winter from December to February and a hot summer from April to June. The temperature extremes vary from about 45 degrees Celsius in the summer to 3 degrees Celsius in the winter. The City receives about 100 cm of annual rainfall mostly from the southwest monsoons between July and September. The city lies at an average altitude of 110 meters above mean sea level and generally slopes to the east. Lateral slopes are towards the River Gomti, which flows from north-west to south-east through the heart of the city, dividing it into the *Trans-Gomti* and *Cis-Gomti* regions.



The more densely populated areas of the city are on the southern bank of the River Gomti and several planned residential colonies have been developed to the north of the River. Lucknow is known for its cultural heritage.

2.2 Demographic and Social Profile

Lucknow Urban Agglomeration (LUA) became a million-plus city in 1981. Besides the areas under jurisdiction of the Lucknow Municipal Corporation, the agglomeration also includes the Lucknow Cantonment. Census 2001 estimated the population of the Lucknow Urban Agglomeration at 22.46 lakhs. This included an estimate of about 60,000 as population of the Lucknow Cantonment and 21.85 lakh population of Lucknow City. The population of the Lucknow Cantonment has remained constant in the last three decades (Table 2.1).

Demographic data for the Lucknow Urban Agglomeration and Lucknow City from Census 2001 and other available documents was analysed to understand the growth patterns. The Master Plan 2021 is the basis of information for the projected population and land use in peripheral areas where considerable private development has been taking place. Growth rates have been arrived at through projecting geometric growth, arithmetic growth and incremental growth rate methods and adding an additional population of 100,000 every five years for additional areas that might get incorporated within the city. This seems a conservative estimate however, given the current pace of real estate development and the intention of government to attract new investment in Lucknow.

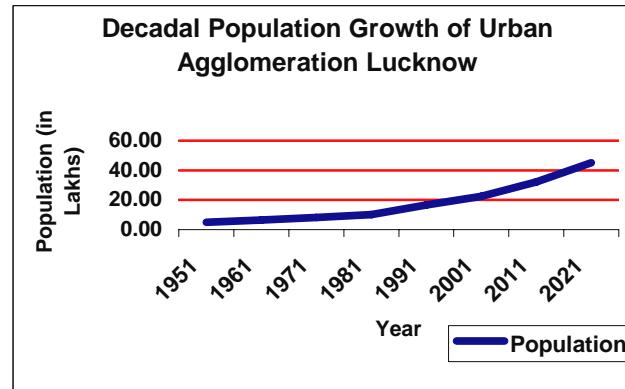
Table 2.1: Decadal Growth of Urban Agglomeration & Lucknow Municipal Corporation (1951-2021)

Year	Lucknow Urban Agglomeration			Lucknow Municipal Corporation			Lucknow Cantonment		
	Population	Decadal Growth	Growth rate %	Pop.	Decadal Growth	Growth rate %	Pop.	Decadal Growth	Growth rate %
1981	1007604	193622	23.79	947990	173346	22.38	59614	20276	51.54
1991	1669204	661600	65.66	1619116	671125	70.79	50089	-9525	-15.98
2001	2245509	576305	34.53	2185927	566811	35	59582	9493	18.95
2011*	3226000	980491	43.66	3166000	980073	44.84	60000	418	0.70
2021*	4500000	1274000	39.49	4440000	1274000	40.24	60000	0	0

Source: Master Plan: 2021; * Projected Population

Official records show that Lucknow's population grew more than that of other cities in the 1980s – mainly due to the extension of the jurisdiction of the Lucknow Municipal Corporation - from 14,594 hectares in 1981 to 33,750 hectares in 1991. In the 1990s, average growth was comparable to that of cities of similar size, more than Kanpur and Nagpur, but lower than Jaipur and Surat.

The expansion in the 1980s meant the population density decreased from 69 persons per hectare to 49 persons per hectare, but has now increased to 67 persons per hectare due to population growth. The population growth projected varies between 3.51 to 4.37 per cent per year over different 5-year periods until 2021, somewhat higher than for the average growth rate of cities of similar size in the country and the state.



2.2.1 Growth Components

Migration into Lucknow accounts for 36% increase in population over the last decade. Of the 5.76-lakh people added to the LUA during 1991-2001, about 2 lakh were migrants. In comparison, the natural growth was 3.68 lakh.

Table 2.2: Composition of Growth during 1991-2001

Composition	Population Increase
Natural Increase	368998
In Migration	207307
Total Increase	576305

Source: Census of India 2001 - Migration Tables D-3 Series.

Census 2001 estimates that in the last decade, Lucknow received 2,07,307 migrants, 56.6% of which were from rural areas, and cites the following as reasons:

- As a Capital City, Lucknow offers better social and physical infrastructure and amenities compared to other cities in the state.

- With a population density of 67 persons per hectare, Lucknow is recognised as a low-density - low-rise city with open spaces and greenery. The City is also comparatively cleaner than most other cities in the state.
- The City offers better employment opportunities and education facilities.
- Lucknow's position as a city bordered by smaller towns like Hardoi and Sitapur in the northwest; Bara Banki in the northeast, Rae Bareli in the south-east and Unnao in the south west attracts migrants in search of better employment opportunities and higher order services like education and health. According to the census, 22% of the migrants from rural areas and 27% from urban areas cited 'employment' as the reason for migration. The other reasons for migration include business reasons, education opportunities, marriage etc. Figure 2.1 and 2.2 show the various reasons for migration from rural and urban areas into Lucknow.

Figure 2.1: Reasons for migration from rural areas

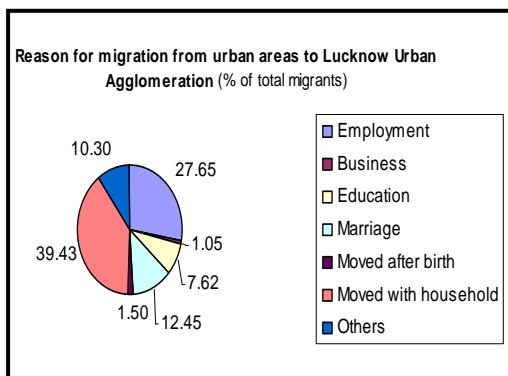
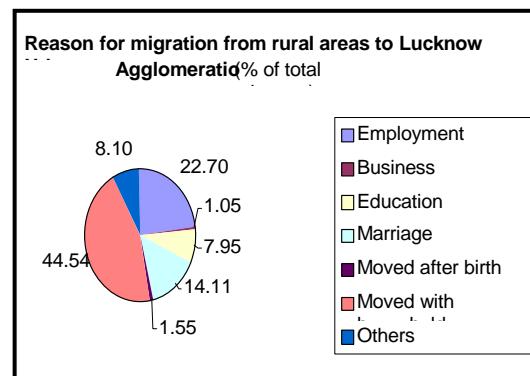


Figure 2.2: Reasons for migration from urban areas



Source: Census 2001- Migration Tables D-3 Series

2.2.2 Gender Ratio

In the Lucknow Municipal Corporation, in 2002, there has been a steady increase in the number of women per 1000 men – from 829 in 1971 to 849 in 1981, 862 in 1991 to 893 in 2001. While this rise is attributable partly to natural growth, discussions with the LDA identify the cause as being the 'security' that the city offers and the good education facilities – factors that have meant that a lot of women and children are staying in Lucknow even when the male members of the family are working elsewhere. An additional factor could be that entire rural families are migrating in search of employment instead of the general practice of only men migrating.

2.2.3 Literacy

Despite comparative economic prosperity and better infrastructure and education facilities, literacy levels in the City vary from those in other cities of similar size. The literacy rate in the Lucknow Municipal Corporation area recorded in 2001 was 67.46% (Table 2.3). However, within the state the City has a relatively high level of literacy – as could be expected in line with general trends about differences between urban and rural areas. There were apparent increases both in the Municipal Corporation area as well as in the Urban Agglomeration. Female literacy levels though lower compared to total literacy levels have also shown an increasing trend in the last three decades (Census 2001).

Table 2.3: Literacy in Lucknow Municipal Corporation, Urban Agglomeration and the State

Lucknow Municipal Corporation		Lucknow Urban Agglomeration	UP State	
Year	Total Literacy (%)	Female Literacy %	Total Literacy (%)	Total Literacy %
1981	56.81	49.10	57.04	45.88
1991	60.35	53.49	60.27	48.68
2001	67.46	62.82	67.60	

Source: Census 2001

2.2.4 Key Demographic Issues

- Although current levels of migration are lower compared to cities of similar size, population growth in Lucknow City growth over the next few years will likely be somewhat higher than elsewhere (around 4 percent). The majority of migrants are coming from the surrounding districts. The upward trend needs to be taken into account in city planning.
- The city's demographic profile has shown an increase in the number of women relative to men, and an increase in female literacy and employment. The social and economic implications may be significant and would need to be taken into consideration in the planning and preparation of projects, as well as arrangements to involve citizens in city governance.

2.3 Economic Base

The major industries in the Lucknow Urban Agglomeration include aeronautics, machine tools, distillery chemicals, furniture and chikan embroidery. Lucknow has traditionally been associated with chikan embroidery work on readymade garments, sarees, etc. with most units being small-scale and household based and located in the old city area.

Lucknow is also a major centre for research and development (R&D) and an education centre. Prominent R&D centres located in the city, include the National Milk Grid of the National Dairy Development Board, Central Drug Research Institute (CDRI), Central Institute of Medical and Aromatic Plants (CIMAP), Industrial Toxicology Research Centre (ITRC), National Botanical Research Centre Institute (NBRI), National Handloom Development Corporation (NHDC) Ltd., Pradeshik Cooperative Dairy Federation Ltd (PCDF), Research Design and Standards Organisation (RDSO), and U P Export Corporation.

The Principal educational institutions in the City include the University of Lucknow, King George Medical College, Indian Institute of Management, Birbal Sahni Institute of Palaeo-Botany, the Board of Technical Education, Institute of Engineering and Technology, Institute of Judicial Training and Research, Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGIMS), the Bathkhande University of Indian Music, the Central Veterinary Research Laboratory and the Building and Road Research Station and Indian Institute of Sugarcane Research.

Lucknow, being a tehsil headquarter, a divisional headquarter and the state capital, is a prominent administrative and commercial centre of the state. The proportion of working population of Lucknow has remained more or less constant since 1981, at around 28% as shown in Table 2.4.

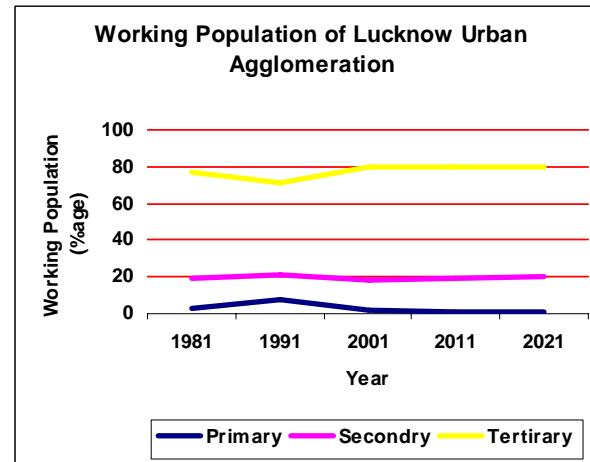
Table 2.4: Working and Non-working Population of Lucknow Urban Agglomeration

Categories	1981		1991		2001		2011		2021	
	Population	%	Population	%	Population	%	Population	%	Population	%
Working	279,295	27.71	442,450	26.51	617,664	27.51	919,410	28.5	1,350,000	30
Non-Woking	728,705	72.29	1,226,754	73.49	1,627,845	72.49	2,306,590	71.5	3,150,000	70
Population	1,008,000	100	1,669,204	100	2,245,509	100	3,226,000	100	4,500,000	100

Source: Master Plan: 2021

The employed (or ‘working’) population in the Urban Agglomeration was 27.5 percent in 2001, and the Master Plan 2021 envisages that it will increase to 30.0 percent in 2021.

The tertiary sector has seen a rise in terms of share of workforce – it accounted for about 80 per cent of the work force in 2001 compared to 77 percent in 1981. In the same period, there was a decline in the percentage of primary workers due to the amalgamation of peripheral areas with their agricultural orientation within the city in the 1980s. The Master Plan envisages that while the proportion of tertiary workers in the UA will not change significantly in 2011 and 2021, there will be a decrease in the proportion of primary workers and a relative rise in secondary workers (Table 2.5).

*Table 2.5: Working Population by Major Occupational Categories*

	1981		1991		2001		2011		2021	
	Persons	%	Persons	%	Persons	%	Persons	%	Persons	%
Primary	8706	3.12	32208	7.28	12783	2.07	9194	1.0	6750	0.5
Secondary	54474	19.50	93632	21.16	111180	18.00	174687	19.0	270000	20.0
Tertiary	216115	77.38	316610	71.56	493701	79.93	735524	80.0	1073250	79.5
Total	279295	100	442450	100	617664	100	919410	100	1350000	100

Source: Master Plan 2021

Of the 598579 total number of workers in Lucknow Municipal Corporation, in 2001, main workers comprised 89.82 per cent and marginal workers including those seeking employment was 10.18 percent. The distribution of main workers by education categories, (Table 2.6), shows that 79 percent of the workforce in the City is literate. However, the proportion of workers with technical degrees/diplomas including postgraduate was quite small at about 4%.

Table 2.6: Distribution of Main Workers by Education in Lucknow Municipal Corporation

Education	Number of workers	Percent workers
Illiterate	111554	20.75
Literate	426109	79.25
Below matriculation	116642	21.69
Matriculation but below graduate	128625	23.92
Technical diploma holders	3474	0.65
Graduate and above without technical degree	146445	27.24
Technical degree/Post graduate	19983	3.72
Total	537663	100.00

Source: Master Plan 2021

2.3.1 Key Economic Issues

- Lucknow is the administrative capital of the largest state in India, with a rich cultural heritage and history. The key characteristics that determine its economic base include – the position of the City as an administrative centre, a centre for education and tourism. In recent years there has been a noticeable rise in retail trade and health services. The real estate market is undergoing a growth and the Master Plan 2021 anticipates a slight growth in the services sector over the next 15 years.
- Lucknow is well connected through the rail network to other parts of the state, the country as well as the national capital. While the present levels of connectivity are adequate for current levels of economic development, the city needs to seriously consider better connectivity options by air in order to improve its attractiveness to investors.
- Despite the favourable factors though, the city's infrastructure is not at a standard that seems to comfort potential investors on a large scale. In the absence of a clearly reformed institutional environment, such infrastructure may not be developed, and private investors not comforted by regulatory arrangements. As a result, the present economic base continues to fall short of the city's demands for municipal and service agency revenue, and the broader need to create jobs and attract more investment. The city may also benefit from improvements in literacy, as the proportion of workers with technical qualifications is small.

2.4 Physical and Environmental Characteristics

2.4.1 Spatial Patterns

The current land use of the Urban Agglomeration excluding that of the Cantonment is shown in Table 2.8. The Master Plan 2021, which is the source of the information, estimates that Lucknow covered an area of 16,270 hectares in 2004-05. Compared to 1987 when the area was estimated at 9170 hectares, there has been a 77.4% increase in the total area in 2004-05. Trends in land uses has been interesting, especially the fact that residential use has grown dramatically in comparison to all other uses, although there has also been notable growth in commercial, industrial and public service land use.

While population densities in core areas, which include the major part of Cis-Gomti specially the old habitations, are around 600 persons/hectare or more the densities in peripheral Trans-Gomti

area; vary from 400 to 600 persons/hectares. The total Municipal area as per 2001 census is 143 sq.km.

With the radial growth of the city, the Cantonment has gradually been engulfed and is today more centrally located. A Ring Road system has been developed to connect the new development around the Old City and the Cantonment and the Trans-Gomti areas. The Lucknow Development Authority has planned to develop the intervening open spaces to take advantage of the Ring Road. New housing colonies are already under construction in the southeastern and eastern parts of the City. It is interesting to note that the Master Plan 2021 does not take into account the development that is taking place on account of the entry of private developers. Like most cities, Lucknow is witnessing a real estate boom with a large number of private developers coming in – this additional development will necessarily require infrastructure that needs to be taken into account when planning investments in the future.

Table 2.8: Existing Land use - Lucknow city area (in Hectares)

Land use	1987		2004-05		Growth percentage
	Area	%	Area	%	
Residential	4,485.98	48.92	8,945.00	54.98	99.40
Commercial	223.77	2.44	360.00	2.21	60.88
Offices	474.69	5.18	560.00	3.44	17.97
Industrial	596.22	6.50	990.00	6.08	66.05
Parks/Playgrounds	346.48	3.78	435.00	2.67	25.55
Public Services	902.02	9.84	1,410.00	8.67	56.32
Traffic	952.00	10.38	1,240.00	7.62	30.25
River/water bodies	193.66	2.11	310.00	1.91	60.07
Open Land	996.14	10.86	2,020.00	12.42	102.78
Total	9,170.96	100.00	16,270.00	100	77.43

Source: Master Plan 2021

While there is a real estate boom on the one hand, however, there has been a growth in slum conditions on the other. The legal issues and complexities around the definition of slums are discussed in more detail in Chapter 4, but perhaps most significant here is the fact that irrespective of the data source – DUDA, Oxfam - there is consensus that there are large numbers of poor people in the city – more than 60 to 70 % population live below the poverty line. The city continues to attract new migrants, many of who end up in informal settlements that would generally be regarded as slums. These areas are spread across the city, so that any action to deal with the related challenges has to be on a citywide scale. It is not a physical pattern that clearly separates better-off areas from others.

In the absence of adequate measures taken to protect the environment, urban development and expansion has resulted in steady deterioration of the City's environment resulting in adverse impacts on water, air, land-ecology, and public health and has even caused serious damage to heritage properties.

Vehicular emissions are the main cause of air pollution. In recent years there has been a rapid rise in vehicular density resulting in many urban and environmental problems. The concentration of Suspended Particle Matter (SPM) in the industrial and residential pockets of the city is alarming. Its incidence ranges from high to critical. According to the 'Pre-monsoon Assessment of

Environment Status of Lucknow' conducted by the Environment Monitoring Division of the Industrial Toxicology Research Centre (ITRC), Lucknow, air pollution has shown a trend of critical increase when compared to previous years. The Respirable Suspended Particulate Matter (RSPM) in the air was found to be more than the permissible limit of 100-microgram/cubic meter set by National Ambient Air Quality Standards.

The position of critically polluted areas in Lucknow City during 2001 is shown in Table 2.9. Among the four residential areas, Aliganj and Gomtinagar showed higher values of oxides of nitrogen in the air.

Table 2.9: Air Quality and Noise Pollution in selected areas of Lucknow

Location	RSPM	Status of Noise Pollution in decibels	
		Day	Night
Residential Areas			
Permissible		55	45
Aliganj	216.31	70.5	57.8
Vikasnagar	204.73	69.2	53.8
Indiranagar	195.80	73.5	65.8
Gomtinagar	147.57	65.9	54.6
Commercial Areas			
Permissible		65	55
Charbagh	224.96	77.9	68.7
Hussainganj	216.37	74.2	66.7
Hazratganj	178.21	73.2	65.8
Chowk	284.72	70.6	63.8
Aminabad	275.27	68.9	60.5
Alambagh	229.53	69.8	68.5
Industrial Areas			
Permissible		75	70
Amousi	180.29	65.6	63.8
Talkotra	206.71	73.2	58.2

Source: U.P. Pollution Control Board, Lucknow

The level of noise pollution in silence zones such as hospitals, courts, schools and cantonment in Lucknow is 56 percent higher than the prescribed standard of 50 db as shown in the Table 2.10. The noise levels are 30 to 40 times above the prescribed standards even at night.

Table 2.10: Standards of Noise pollution

Zone/Category of Area	Limits in db day time	Limits in db day time
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

Source: U.P. Pollution Control Board, Lucknow

Increasing population growth of the city coupled with increasing commercial and industrial activity has resulted in rising water pollution both in the River Gomti as well as of the ground water sources. The pollution levels have been further aggravated by the lack of treatment or disposal facilities for solid and liquid wastes. As per a study conducted under 'Monitoring of Indian Aquatic Resources (MINARS) programme, the average time series yearly in this regard (1997 to 1999) is shown in Table 2.11.

Table 2.11: Water Quality of River Gomti at Lucknow

Sampling Point/Year	1997			1998			1999		
	DO (mg/l)	BOD (mg/l)	Total coll. MPN/100 ml.	DO (mg/l)	BOD (mg/l)	Total coll. MPN/100 ml.	DO (mg/l)	BOD (mg/l)	Total coll. MPN/100 ml.
Gomti Lucknow	8.48	2.2	3500	7.5	2.5	4500	8.6	2.3	3442
Gomti Lucknow Barrage	2.9	6.6	332000	3.8	6.6	350000	4.2	6.9	445833

Source: U.P. Pollution Control Board, Lucknow

The River Gomti water is fit for drinking after treatment at Dandnamau Ghat, but when it enters Lucknow city at Gaughat, 27 drains carrying domestic sewage discharge directly into it thus deteriorating the water quality. It is estimated that these drains discharge around 32 million litres of sewerage and household wastes each day into the River Gomti. The release of industrial effluents along the course of the river further aggravates the problem and the water is rendered highly unfit for drinking. Although the Jal Sansthan treats the river water before supplying to the City, consumers do not consider this to be safe. Being able to address the pollution of the River Gomti is an area of great concern for the residents of the City.

2.4.2 Declining Ground Water

It is estimated that against a summer demand of 702 MLD of water, the Lucknow Jal Sansthan manages to supply only around 450 MLD. The balance demand is met through the use of hand pumps and tube wells. The indiscriminate boring of tube wells has led to considerable lowering of the ground water table from 0.80 meters to 3.08 meters in just one year (1999-2000).

2.4.3 Key Spatial and Environmental Issues

- Lucknow is still a low-density low-rise city with multi-storeyed construction just starting.
- The City has a low percentage of area dedicated to roads compared to other similar sized cities leading to traffic congestion.
- The City is growing rapidly in all directions but with a higher rate of growth along Faizabad Road in the Trans-Gomti area. The new development areas have inadequate infrastructure.
- Significant numbers of poor people live in the city, settled in slums without access to basic services. These slums are distributed fairly uniformly across the City, and dealing with the challenges they face cannot be done in isolation from a wider city development strategy. The integration of these areas within the larger fabric of the city in a manner that ensures basic services without encouraging further illegal occupation of land and encroachments is a major

challenge. Finding ways to provide security of tenure to the urban poor and/or providing alternate land for relocation are key issues therefore.

- Effective measures need to be taken for abatement of noise and air pollution so that the levels do not exceed the prescribed standards. Making the use of CNG compulsory for all public vehicles would go a long way to reduce air pollution significantly.

Immediate measures are needed to check water pollution. Steps in this direction need to be supplemented by effective public participation.

2.5 Heritage

Lucknow is known for its rich history and culture – manifest not just in its many magnificent monuments but an intrinsic part of its lifestyle. While the city has archaeological remains dating back to 3000 BC, the first documented reference to Lucknow is from the thirteenth century when Emperor Akbar divided the Mughal Empire into twelve provinces and chose Lucknow as the seat of Government for Oudh - the most prosperous province of the empire.

In the late 18th century, the Shia Nawabs of Lucknow built several imposing structures, commercial and trading centres that increased the grandeur and opulence of the city. At the time of the first war of independence in 1857, the city suffered a lot of damages and the old past was replaced with new developments during the British period. After independence the city experienced tremendous growth and the distinct "Lucknow" culture – composite, refined, rich and vibrant is slowly disappearing. While there are many magnificent monuments symbolising the glorious past of the city, the following are the better-known monuments.

Bara Imambara: - Nawab Asifudollah built this historic building in 1786, as a famine relief measure to provide employment to the people of the city. The load of the roof is not supported on beams but through an intricate system of arches or the "Bhul Bhuliya". The campus has an imposing mosque on one side and on the other side is a "Babli" or water body connected to the River Gomti.

Roomi Gate: - Just adjacent to the Imambara is an imposing gate structure which when seen from the front looks like a gate but in reality is a structure of several storeys. This monument has now become the logo of the city.

Chotta Imambara: - Beyond Roomi Gate about 30 metres away on the road is located another structure that is famous for its chandeliers and other artefacts. With fountains and a small garden it is a beautiful structure that attracts tourists.

Clock Tower and Picture Gallery: - Located close to the Chota Imambara this structure is adjacent to a picture gallery that is famous for large portraits of the Old Nawabs of Oudh. The novelty of the paintings lies in the fact that they all seem to be looking directly at the viewer from every angle.

Kaiserbagh Complex: - This complex depicts the typical architecture of the old Nawabi period and is said to be have been the residence of the ladies of the Nawabi harem. The whole area is now declared as a heritage zone and efforts are being made to restore it to its old beautiful surroundings.

Maqbara Asfudoalah: - This mausoleum is in a beautiful garden that depicts the harmony of Mughal and Hindu architecture.

Residency: - This is the British settlement that was established following the annexation of Oudh and was the site of the 1857 Mutiny. The Archaeological Survey of India maintains the structure.

In addition to the buildings listed above, there are entire stretches of the city that have a glorious historical past. These include the 'Chowk' that has the 'rouzas' – replicas of all the Shia shrines in the world; Hazratganj that is in the heart of every resident of the city and is very badly overrun by the growth of the city; La Martiniere with its history; Chhatarmanzil; Dilkhusha – the list goes on.

Parks: - Lucknow was famous for its parks and most of the localities derive their names from parks. Along the southern embankment of the River Gomti there are a number of parks viz. Lakshman Park, Globe Park, Buddha Park, Neebu Park etc. These parks have small water bodies and fountains. Most of these parks have been landscaped and developed in the later years and are places of tourist attraction.

Lucknow is also known for its characteristic cuisine, music, the nature of its residents and its overall ambience – each of these elements together with the more tangible buildings combine to create the heritage experience that is Lucknow.

2.5.1 Key Issues: Heritage

- The well-known monuments are relatively better maintained although the attention seems skewed in favour of the monument with lesser attention to its surroundings. Most of the heritage sites need maintenance and designated parking places and space for food stalls. These places also require public toilets.
- There is need therefore to widen the definition of 'heritage' from just monuments to entire precincts and strategise at city level in order that visitors are treated to a holistic 'heritage experience'

2.6 Inner City Renewal Challenges

The inner city area was one of the first to be provided infrastructure in the form of water supply and sewerage systems, drainage, street lighting etc. The pressure of population in this zone has increased significantly both as a result of natural increase as well as its attraction of low rents and large numbers of migrant families. There are few remnants of the once effective infrastructure with the majority of the area facing problems of water supply, inadequate sewage disposal, practically non-existent solid waste management, encroachment of drains etc. Interventions are necessary not only from the point of improving the quality of life of residents but also from the perspective of restoring its past heritage.

The old settlements like Chowk, Kashmisi Mohalla, Nakhas, Aminabad, Saadatganj, Asharafabad, Nawabganj, Rakabganj, Ganeshganj, Chaupatia, Raja Bazar, Daliganj, and Balaganj, etc form the 'inner city'. Daliganj and Balaganj fall on the Trans -Gomti side while the others are on the Cis Gomti side. These localities are centuries old, having been established in the Nawabi period. Today they are densely populated with grossly inadequate infrastructure and some of the old buildings in a dilapidated condition. This locality is home to a number of handicraft 'factories' for Zardosi and Chikan work, alongside people from varying socio-economic groups, ranging from wealthy established families to poor people with vulnerable livelihoods.

2.6.1 Key Issues: Inner City

- Grossly inadequate infrastructure for water supply and sewerage
- Poor solid waste management
- Encroachment of drains and blockages leading to water logging
- Urban decay.

2.7 Water Bodies

According to the Land Records of the Lucknow Nagar Nigam, the city has 846 tanks and ponds - the majority of which are unidentifiable due to reclamation. Lucknow has a number of tanks that were constructed by the Nawabs and their chieftains. Some of these were ancient and famous as religious places and were renovated and developed further by them. Quite a few of these water bodies are lost due to reclamation, but a number have survived, including:

- **Suraj Kund:** - Situated close to the River Gomti on its southern bank at a distance of about 100m, this water body has a temple dedicated to the sun god. In the nineteenth century, the Nawab renovated it and reconstructed the Ghats. A large size drain passes close to it on which a flood pumping station has been built. Recently the local Authorities have developed the Suraj Kund and the area around it.
- **Bara Imambara Babli:** - The eastern campus of the Bara Imambara has an ancient Babli that was renovated in the eighteenth century by the Nawabs of Oudh. A palace stands over it, such that some of its stories remain submerged in water. It used to be a summer palace where the Nawab's guests used to stay. The Babli is mostly deserted except for occasional visits by tourists and most people are unaware of its existence.
- **Raja Tikait Rai Ka Talab:** - It is a pucca talab/tank with a separate bathing ghat for women. This was again built by the Nawabs and has the Sitala Mata temple where an annual fair is organized.
- **Hussainabad Ka Talab:** - This talab is located close to the Clock Tower that was constructed by the Third Nawab of Oudh. This talab is connected to the River Gomti and water levels in it change according to the levels in the river. There used to be two ghats at two corners and two bathing rooms and a system of natural heating of water. This system is now damaged.
- **Chandganj Ka Talab:** - This is a rectangular tank with pucca steps around it and is partly damaged. The tank has a temple and an annual fair is held here on Nagpanchmi.
- **Moti Jheel:** - Located on the southeastern part of the city, a part of this water body has been reclaimed through the dumping of garbage. The residents in the area demanded its restoration and a plan was prepared but not implemented. There is a slaughterhouse located close to the water body that needed to be shifted as a prerequisite to the restoration of the water body but it has not been done as yet.

In addition to the water bodies mentioned above, the River Gomti flows for about 10 km. through Lucknow, and provides an important source of water. The river is grossly polluted as almost all drains of the city carrying sewage and sullage discharge into it. Under the National River Conservation Project estimates for preventing pollution of the river has been prepared. At present work on diverting the waste of the drains and constructing an STP is in progress. Attempts have been made to develop water sports on the river for which a Boat club has been built, but the scope for further recreational development is obviously also constrained by the high levels of river pollution.

The city is unique in having several water bodies within its limits and this aspect requires attention to not only help in micro climate control but also to increase the overall appeal of the city.

SUMMARY

Lucknow is the capital of India's most populous state. It attracts people from surrounding districts in search of employment and higher order services. The City has traditionally been a centre of administration, education and tourism.
Urban growth currently is largely on par with other cities of similar size, and is anticipated to be slightly faster in the immediate future. This needs to be considered in city planning.
Although the city has potential positive economic comparators, such as its heritage and educational institutions, lack of infrastructure and business concerns about the regulatory have been limited the economic base, which has meant inadequate employment opportunities and limits on the local government and service agency revenue bases.
The percentage of people engaged in the tertiary sector is higher than the other sectors. Although literacy levels among the workforce are high, qualifications in technical areas is limited.
City has a significant slum population with slums more or less uniformly distributed across the City and marked by low levels of access to basic infrastructure.
The Master Plan 2021 shows a dramatic increase in land for residential use although it does not take into consideration the real estate boom underway by private developers.
New development areas have not kept pace with levels of infrastructure development
Pollution - air, noise and that of the River Gomti are areas of critical concern
Lucknow has a rich heritage that has been compromised by the pressures of urbanisation – mainstreaming heritage with modernisation is a challenge
Inner city areas are characterised by urban decay
There are several water bodies within the city limits that have been encroached, reclaimed and polluted through the discharge of sewage.
The current analysis points to the fact that growth has happened at a much faster pace than manageable.