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Historical to Contemporary Urban Services in Narnaul City (1991–2022): A Spatial and Statistical Analysis

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Abstract

Urban services play a crucial role in determining the quality of life and sustainability of cities. Narnaul, a historic city in Haryana, has witnessed significant demographic and spatial changes since 1991. This paper analyzes the evolution of urban services in Narnaul from 1991 to 2022, combining secondary data with field-based household surveys. The study highlights disparities between the old core city, intermediate zones, and newly developed extensions. Services such as water supply, sanitation, drainage, solid waste management, health, housing, and transportation are examined through statistical comparisons and ward-level observations. Findings reveal that while new colonies enjoy better-planned infrastructure, service delivery remains irregular. Conversely, old wards face infrastructural stress and overcrowding, reflecting inadequate modernization. The analysis emphasizes the need for integrated and participatory urban planning to address spatial inequalities in service delivery.

Keywords: Urban services, Narnaul city, spatial disparities, field survey, infrastructure, service delivery.

Introduction :

Cities are dynamic entities that continuously evolve in response to demographic pressures, economic transformations, and institutional frameworks. Urban services—comprising water supply, sanitation, solid waste management, drainage, roads, housing, education, health care, and public transport—play a pivotal role in ensuring the smooth functioning of these entities. The adequacy, equity, and sustainability of such services determine the standard of living and the quality of life in urban centers.

Narnaul City, the district headquarters of Mahendragarh in southern Haryana, occupies a unique place in the urban landscape of northwestern India. Historically, it has been a hub of

political, cultural, and administrative activities since medieval times. However, with the onset of modernization and urbanization processes in the post-1991 liberalization era, the demand for urban services in Narnaul increased manifold. The city, like many other medium-sized towns of India, faces the dual challenge of expanding services to meet the growing population while ensuring equitable distribution across socio-economic groups and spatial units.

Between 1991 and 2022, Narnaul witnessed significant changes in its urban fabric. Population grew rapidly due to natural increase and rural–urban migration. Expansion of trade, services, and small-scale industries altered the occupational structure. The pressure on civic infrastructure—water pipelines, sewerage, roads, drainage, health centers, and schools—multiplied, exposing the limitations of municipal capacity. At the same time, various government programs such as the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), and Swachh Bharat Mission attempted to address these challenges.

Despite these efforts, service delivery in Narnaul remains uneven. Core areas enjoy relatively better access, while peripheral wards, particularly informal settlements, continue to suffer from inadequate water supply, poor sanitation, and irregular solid waste collection. This imbalance is further aggravated by financial and institutional constraints of the Municipal Council.

Thus, the present study is significant for three reasons:

1. It documents the historical trajectory of urban service provision in Narnaul over three decades (1991–2022).
2. It combines statistical data and spatial analysis with insights from a primary field survey, making the study empirically grounded.
3. It highlights the gaps between planned interventions and lived realities, offering lessons for sustainable urban governance in medium-sized cities of India.

Literature Review :

Joshi & Agnihotri (2014) study focused on urban services in medium towns of Haryana and Uttar Pradesh. By comparing basic services such as sanitation, water supply, and waste management, they found that the provision of services was inadequate and uneven. They particularly highlighted the weaknesses in solid waste management and sewerage systems, noting that smaller towns like Narnaul face greater challenges due to limited institutional capacity.

Government of Haryana (2019) In its official report on urban development, the state acknowledged that while the pace of urbanization is rising rapidly, smaller cities still lack adequate access to essential services. The report pointed out that water supply, sewerage, and solid waste management remain critical challenges. It emphasized the importance of strengthening urban governance at the municipal level, making the findings highly relevant for Narnaul.

Bhattacharya (2010) studied the process of urbanization in medium towns of India and evaluated the availability of civic amenities. The research concluded that despite economic growth and industrial expansion, civic services such as water supply, healthcare, sanitation, and housing remain insufficient. The study noted that urban expansion alone does not guarantee improved living standards unless supported by adequate urban service delivery.

Ramanathan (2012) analyzed the implementation of urban policies in India and found that participation of local stakeholders in urban planning is very limited. As a result, urban development schemes often fail to address local needs, particularly in small and medium towns. The study suggested that a "top-down" approach reduces the effectiveness of schemes and weakens their sustainability, which is a common issue observed in towns like Narnaul.

Sen (2014) investigated the access of urban poor households to basic services such as drinking water, sanitation, and housing. The study showed that although government schemes exist, their benefits are not evenly distributed, and poor communities often remain marginalized. The findings highlighted how slum households in smaller cities remain more deprived compared to those in larger metropolitan areas, mirroring the conditions found in Narnaul.

Tiwari (2015) study assessed the availability and quality of transport services in Indian cities. It revealed that smaller and medium towns suffer from a lack of organized public transport, which forces residents to depend heavily on private vehicles. This dependency leads to traffic congestion, accidents, and air pollution. In towns like Narnaul, the absence of efficient transport infrastructure is a major barrier to sustainable urban growth.

Mukherjee (2016) conducted research on urban water supply and resource management. The study found that water supply schemes in many Indian towns rely heavily on groundwater, leading to overexploitation and depletion. Due to poor infrastructure and inadequate distribution, residents often face shortages. The study emphasized that towns like Narnaul, where water scarcity is acute, require urgent attention to water conservation and improved management practices.

Dutta (2017) study evaluated the status of solid waste management in Indian cities. The

research concluded that while policies exist on paper, their execution is often limited to collection rather than scientific disposal or recycling. As a result, environmental degradation and public health issues emerge. The findings are directly applicable to Narnaul, where waste collection remains irregular and lacks modern treatment facilities.

Jha (2018) study examined urban housing schemes and their impact on lower-income groups. The findings revealed that most housing policies benefit middle-income households, while the urban poor often remain excluded. The study argued that corruption, weak institutional support, and resource shortages hinder the success of housing programs. This is particularly visible in smaller towns like Narnaul, where slum populations continue to rise despite government interventions.

Raghunathan (2018) studied the state of civic amenities in small and medium towns, focusing on the mismatch between population growth and service provision. The study highlighted water scarcity, poor waste management, and limited health facilities as major concerns. It concluded that financial constraints and weak planning capacity reduce the efficiency of municipal bodies. Narnaul city reflects this trend, where rapid urban growth is not matched by adequate civic infrastructure.

Study Area: Narnaul City, Haryana

Narnaul is located in the southern region of Haryana state at 27º47' North latitude to 28º13' North latitude and 75º 56' East longitude to 76º 21'. There are 1,46,262 people living in 31 wards scattered across an area of around 12.67 square kilometers. It lies 161 kilometers south of Delhi, 43 kilometers north of Khetri, and 25 kilometers south of Mahendergarh district. Geographically, it is a nearly flat region with an elevation of 1000 feet (305 meters) above mean sea level. The avearage literacy rate is 68% , the sex ratio is 901/1000.

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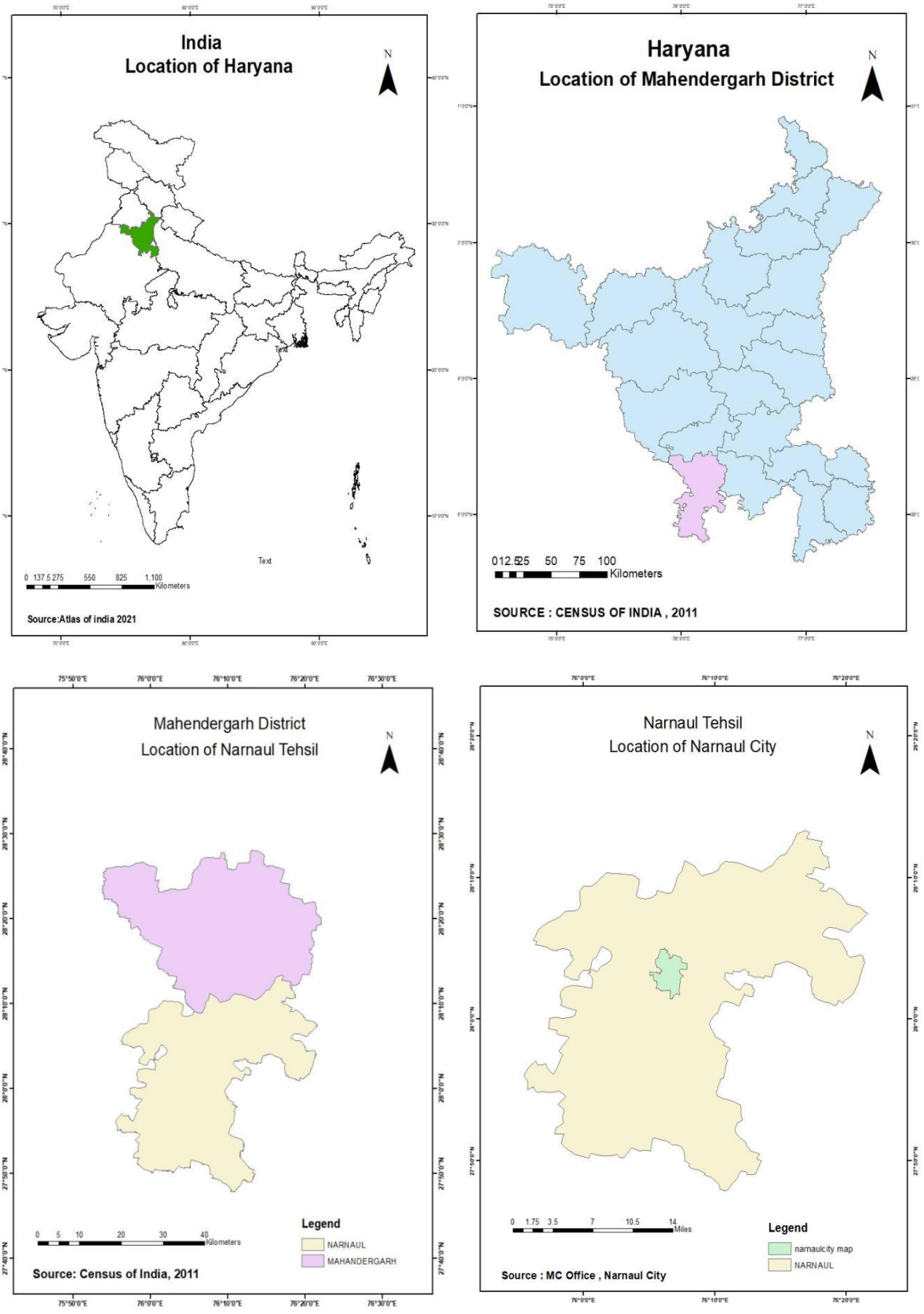
LOCATION MAP OF STUDY AREA



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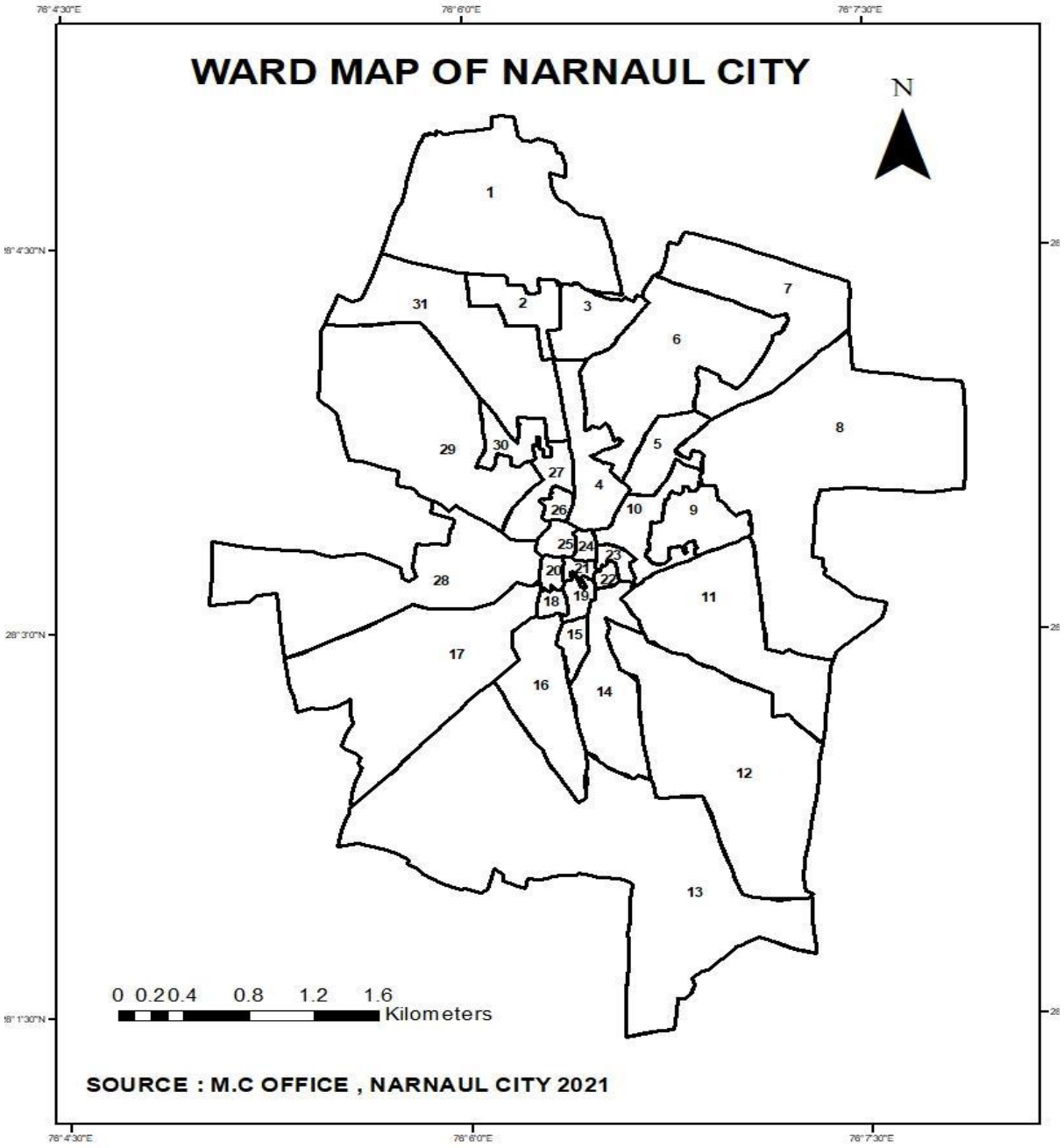

Objectives :

1. To trace the historical evolution of urban services in Narnaul city from 1991 to 2022.
2. To analyze spatial variations in service delivery across old wards, intermediate zones, and new extensions.
3. To identify challenges and inequalities in access to water supply, sanitation, housing, health, and transport.
4. To suggest policy interventions for sustainable and inclusive urban service management in Narnaul.

Database and Methodology :

This study uses a mixed-method approach:

1. **Secondary Data Analysis**
    - Population, housing, and service-related statistics were collected from Census of India (1991, 2001, 2011), Haryana Government Reports (2019), and Municipal Committee records (1991–2022).
    - Scholarly works such as Joshi & Agnihotri (2014), Bhattacharya (2010), Sen (2014), and others were consulted for comparative perspectives.
2. **Field Survey**
    - A household survey was conducted in six wards of Narnaul (Wards 5, 7, 9, 11, 14, and 17) during 2022.
    - A total of **120** households were surveyed (20 per ward).
    - Wards were chosen to represent three categories:
        - **Old Core Wards (5, 7)** – These represent the congested, traditional settlements located near the historic town center. They face high population density, narrow lanes, and aging infrastructure.
        - **Intermediate Zone Wards (9, 11)** – These wards lie in the transitional growth belt, reflecting mixed land use, semi-planned housing, and ongoing infrastructural improvements.
        - **New Extensions Wards (14, 17)** – These represent planned colonies and new housing developments, often better serviced but still facing challenges of waste management and connectivity.
    - The survey assessed access to water, sanitation, solid waste disposal, electricity, health, housing, and transport.
    - Respondents were selected using systematic random sampling.

Status of Urban Services in Narnaul (1991–2022)

5.1 Water Supply

Table 1: Household Access to Drinking Water in Narnaul City (1991–2022)

Year	% Households with Piped Water	% Households using Handpumps/Wells	Source
1991	58.2	41.8	Census of India, 1991
2001	67.5	32.5	Census of India, 2001
2011	74.6	25.4	Census of India, 2011
2022	82.0	18.0	Field Survey, 2022

Piped water coverage expanded significantly over three decades. However, field survey data revealed stark inequalities. While households in old wards (5 and 7) and new colonies (14 and 17) reported twice-daily supply, peripheral wards often received water only once a day. Seasonal shortages were acute during summer, reflecting groundwater stress.

5.2 Sanitation and Sewerage

Table 2: Household Access to Toilet and Sewerage Facilities (1991–2022)

Year	% Households with Latrine Facility	% Connected to Sewerage	Open Defecation (%)	Source
1991	44.7	22.0	40.0	Census of India, 1991
2001	56.3	33.4	28.0	Census of India, 2001
2011	72.9	48.1	15.5	Census of India, 2011
2022	88.0	61.0	7.2	Field Survey, 2022

Toilet coverage increased markedly after 2014 under the Swachh Bharat Mission. Yet, the sewerage network remains partial. Field survey responses indicated that slum households still rely on community toilets, which suffer from poor upkeep.

5.3 Solid Waste Management

Table 3: Status of Solid Waste Collection (1991–2022)

Year	Waste Collection Coverage (%)	Door-to-Door Collection (%)	Waste Disposal Method	Source
1991	35	-	Open dumping	Municipal Council, 1991
2001	47	12	Open dumping	Municipal Council, 2001
2011	61	35	Landfill (partial)	Municipal Council, 2011
2022	82	70	Segregation + landfill	Field Survey, 2022

Waste collection improved, particularly with the introduction of door-to-door services. However, segregation at source remains low (~25% of households). Residents in peripheral wards expressed dissatisfaction with irregular collection.

5.4 Education and Health Services

Educational institutions expanded significantly, especially private schools and coaching centers. Government schools, however, remain overcrowded and underfunded. Health facilities increased in number, but the doctor–population ratio is far below WHO norms. Many survey respondents preferred private clinics due to inadequate services in government hospitals.

Findings and Discussion :

The analysis reveals both achievements and challenges in Narnaul's urban service delivery. Over the last three decades, quantitative improvements in water, sanitation, waste management, education, and health services are evident. Yet, disparities remain stark between wards and income groups.

Spatial inequalities persist—old and planned colonies receive better services, while peripheral zones lag behind. Population growth has outpaced infrastructure capacity, straining existing systems. Field survey data showed that 72% of low-income households were dissatisfied with water and sanitation services, compared to 34% among high-income groups.

Education and health facilities expanded in numbers but not proportionally in quality. Government schools and hospitals remain overstretched, pushing households toward private

alternatives, often at higher costs. Municipal authorities face constraints of finance, technical manpower, and citizen participation, undermining sustainability.

Government programs such as AMRUT and Swachh Bharat Mission brought measurable progress, but monitoring gaps led to uneven benefits.

Conclusion :

The study of Narnaul city over the period 1991–2022 provides significant insights into the changing landscape of urban services in a medium-sized Indian town. The analysis of secondary data and the household survey clearly demonstrate that the city has witnessed notable progress in terms of water supply, sanitation, solid waste management, education, and health services. Government interventions such as AMRUT, Swachh Bharat Mission, and state-level initiatives have played an important role in expanding service coverage. The proportion of households with piped water and sanitation facilities has grown steadily, and new schools, colleges, and health centers have been established to meet rising demand.

However, progress has not been uniform across the city. Historical settlement areas, such as the old core wards, face challenges of congestion, aging infrastructure, and insufficient sewerage. On the other hand, new planned colonies enjoy relatively better facilities, but still report irregularities in waste collection and water supply. The intermediate transitional zones lie somewhere in between, with partial access and mixed levels of satisfaction among residents.

The field survey reveals that inequality in service delivery remains a major concern: low-income households and those located in peripheral wards continue to struggle with irregular water supply, poorly maintained community toilets, and limited access to reliable health care.

Another key finding is the mismatch between quantitative expansion and qualitative improvement. While the number of institutions has increased, issues of overcrowding, lack of maintenance, poor monitoring, and low citizen participation persist. Many residents expressed preference for private schools and clinics, highlighting a lack of confidence in public institutions. Financial and administrative limitations of the Municipal Council have further restricted its ability to keep pace with urban growth.

Thus, the case of Narnaul highlights the broader dilemma of medium-sized cities in India: while aggregate indicators suggest improvement, disparities, inefficiencies, and governance challenges undermine sustainability. Unless these issues are addressed, the city may continue to face uneven growth and service delivery in the coming decades.

Recommendations :

In light of the findings, it is clear that Narnaul requires a comprehensive and integrated strategy to ensure equitable and sustainable urban services. First, there is a strong need for ward-level planning. Services must be monitored and upgraded according to the unique needs of each ward—particularly in the old and peripheral zones that have lagged behind. Regular surveys and GIS-based mapping should be employed to track service distribution and identify gaps in real time.

Second, community participation is essential. Residents should not only be passive recipients of services but active partners in managing sanitation, waste, and water. Establishing local ward committees or mohalla sabhas could improve accountability and ensure that complaints are quickly addressed. Awareness campaigns around waste segregation, water conservation, and hygiene can also enhance citizen responsibility.

Third, strengthening public institutions must be prioritized. Investment in government schools and health centers is needed to reduce dependence on the private sector and ensure affordable access for all households. Adequate staffing, modern facilities, and transparent monitoring mechanisms would restore confidence in these institutions.

Fourth, the Municipal Council requires financial empowerment. With limited budgets, it struggles to expand infrastructure at the pace required. Diversifying revenue sources through property tax reform, user charges, and public–private partnerships could help bridge the financial gap. However, such mechanisms must be designed in a way that does not burden low-income households disproportionately.

Finally, long-term sustainability should guide future planning. Climate variability, groundwater depletion, and rising solid waste volumes pose serious risks to Narnaul. Integrating renewable energy solutions, rainwater harvesting, recycling, and eco-friendly waste disposal will be critical to maintaining the city's livability. Coordination among state government, municipal authorities, and local communities will determine the effectiveness of these efforts.

In sum, while Narnaul has made substantial strides in urban service provision, its future progress depends on addressing inequality, improving governance, and adopting sustainable practices. A balanced focus on infrastructure, inclusivity, and citizen participation will ensure that the city evolves as a model for medium-sized urban centers in Haryana and beyond.

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