



Urban Transformation in Varanasi: Balancing Core Decongestion and Peripheral Expansion through Strategic Planning

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Abstract—The city of Varanasi has developed along the banks of the Ganges River. The Ganges River has acted as a focal point on one side, and the city's growth has occurred in a semi-circular direction. One of the world's oldest continuously inhabited urban centres, the city of Varanasi presents a unique challenge in terms of physical planning and growth management due to its complex cultural, religious and morphological structure. Over the centuries, the city has grown organically along the western bank of the Ganges, resulting in a dense, mixed-use urban centre with narrow, unplanned lanes, which contrasts with modern expansion in peripheral areas. The city has a radial development pattern, and areas such as BHU, Mandwadih, Sheopur, and Sarnath have emerged as new growth centres in all directions. Over time, along with the incorporation of many villages and urban settlements, urban development has created irregularly built-up areas along the periphery of the city's central area. The diesel-locomotive works and residential colonies on 250 hectares of land in the southwest and the soda ash factory along GT Road to the east mark the development around the edge of the rural city. Physical planning in Varanasi has historically lacked a comprehensive vision, especially during the colonial and early post-colonial periods, when interventions focused more on civic infrastructure and administrative discipline than on long-term spatial planning. However, in recent decades, the Varanasi Development Authority (VDA) has attempted to implement a structural growth strategy by formulating master plans, zoning regulations, and heritage conservation frameworks.

Keywords: Urban growth, Urban transformation, Varanasi city, Master plane, Land use, Smart city mission.

I. INTRODUCTION

Varanasi, one of the world's oldest continuously inhabited cities, is grappling with acute urban congestion, especially in its historic core. Characterized by narrow lanes, high population density, and unregulated development, the Old City faces mounting pressure on infrastructure, environment, and public services. Given limited land availability and infrastructural fragility, vertical expansion through increased Floor Area Ratio (FAR) poses additional challenges. This paper explores strategic approaches to decongest the urban core through planned peripheral townships, infrastructural decentralization, and cross-river urban expansion. It also highlights the role of green infrastructure and multifunctional public spaces as sustainable tools to ease congestion and enhance urban resilience while preserving the cultural integrity of this sacred city.

II. LITERATURE REVIEW

Varanasi, one of the world's oldest cities, is experiencing rapid urban growth and transformation. Studies have revealed significant land use changes, with agricultural areas decreasing by 37.57% and built-up areas increasing by 215.46 ha/year between 1976 and 2010 (A. Ohri, 2012). The city's urban sprawl has been analyzed using geospatial techniques, revealing dynamic growth patterns over two decades (2001-2021) influenced by multiple factors (Ratnadeep Dutta & Iman Banerjee, 2024). Varanasi's unique cultural landscape, shaped by its multi-religious and multi-cultural population, significantly modifies the urban environment (Gownamani Dhanraj, 2022). Recently, Varanasi has been incorporated into India's Smart Cities



Mission, focusing on developing a Smart Heritage City that balances tradition and modernity while emphasizing heritage and tourism (Diganta Das et al., 2024). These studies highlight the complex challenges of managing Varanasi's growth while preserving its cultural and historical significance. However, recent development projects like the Kashi Vishwanath Corridor Project have elicited mixed reactions from residents and tourists. While some welcome the improvements, others express concerns about the emotional, economic, and social impacts on local communities (Pati & Husain, 2023). These studies highlight the complex challenges of balancing Varanasi's urban growth, heritage conservation, and tourism development. This rapid urbanization has increased land surface temperature, with positive correlations observed between built-up areas and temperature (Tiwari & Kanchan, 2024). Despite its rich cultural and religious significance, Varanasi's riverfront ghats have not yet been included in the UNESCO World Heritage List, partly due to political complexities and a lack of stakeholder support (Singh & Rana, 2019). Urban planning efforts, including master plans and development strategies, aim to balance modernization with heritage conservation, though challenges remain in prioritizing heritage values within the context of rapid urban growth (Singh & Rana, 2019).

Problem identification: Despite its historical continuity and cultural richness, Varanasi faces critical challenges in physical planning and growth management. The city's unregulated and organic spatial expansion and high population pressure have led to congested core areas, deteriorating infrastructure, and encroachment on heritage zones. Formal planning interventions, such as the Master Plan 2031 and Smart City Mission initiatives, often struggle to integrate the city's sacred geography with modern urban development needs. The absence of coordinated stakeholder involvement, weak implementation of zoning regulations, and lack of heritage-sensitive planning have intensified the tension between modernization and conservation. Moreover, rapid land use transformation, rising land surface temperatures, and increasing tourist pressure have further strained civic amenities, open spaces, and ecological stability. These complex and interlinked issues point to a fragmented and reactive planning approach, necessitating a more inclusive, sustainable, and culturally grounded framework for managing Varanasi's urban growth.

III. OBJECTIVES

This paper critically examines Varanasi's spatial transformation in the context of institutional planning and the characteristics of different zones of Varanasi city's land use change.

IV. METHODOLOGY

This paper critically examines the spatial transformation of Varanasi in the context of institutional planning, land use change, and population pressure. It further assesses the effectiveness of planning tools such as Master Plan 2031 and Smart City Mission in managing infrastructural development while preserving the sacred and cultural essence of the city. This study adopts a mixed-methods approach, including spatial analysis using GIS, comparison of historical maps and policy review. The aim is to assess whether the current planning processes are sustainable and inclusive and how they can be integrated with heritage-sensitive development to achieve balanced urban development.

V. URBAN STRUCTURE AND HISTORICAL GROWTH OF VARANASI

Varanasi's urban form is characterized by a distinct spatial and temporal layering, which reflects the city's long-standing cultural and historical evolution. The settlement typology of the city may be broadly categorized into three zones: the Old City area, the Central City, and the New Peripheral Expansion. The core or Old City, situated along the Ganga riverfront, embodies an organic, compact morphology, with architectural elements that trace back to the post-Afghan period, while the central and peripheral areas represent more recent expansions, developed primarily over the last 150 years (CDP, 2006; Singh, 2017).

The Old City core, aligned along the concave meander of the Ganga's western bank, presents a densely built, organic street pattern with irregular plots and minimal open space, reflecting the morphological imprint of pre-modern settlement practices. Much of this fabric can be traced to the post-Afghan and early Mughal periods, with successive modifications under regional

rulers and merchant guilds (CDP, 2006; Singh, 2017). The Central City represents a transitional morphology—wider streets, grid-based layouts in certain sectors, and civic institutions developed primarily under colonial and early post-independence planning initiatives. The Peripheral Expansion Zone embodies contemporary suburban morphology, characterized by larger residential plots, planned colonies, and transport-linked commercial corridors developed over the last 150 years, with rapid growth after the 1980s.

The ritual landscape of the ghats constitutes the most enduring morphological layer of Varanasi. The earliest textual references to Dashashvamedha Ghat appear in the 2nd century CE, linked to the Ashvamedha Yajna performed by rulers of the Nāga dynasty (Dwivedi, 1994). Archaeological and textual evidence indicates that during the Gupta period (3rd–6th century CE), ghats were multifunctional spaces—simultaneously serving as ritual platforms, river trade nodes, and venues for cultural discourse. Inscriptions from the Gāhāḍavāla dynasty (11th–12th century CE) list ghats such as Adi Keshava, Vedeshvara, Kapalamocana, Trilocana, and Svapaneshvara, underscoring their spatial centrality and ritual significance (CDP, 2006; Gutschow, 2006). Today, the 84 ghats along the 6.5 km riverfront not only function as religious spaces but also form a critical axis for tourism, artisanal activity, and heritage representation (Gutschow & Michaels, 2005).

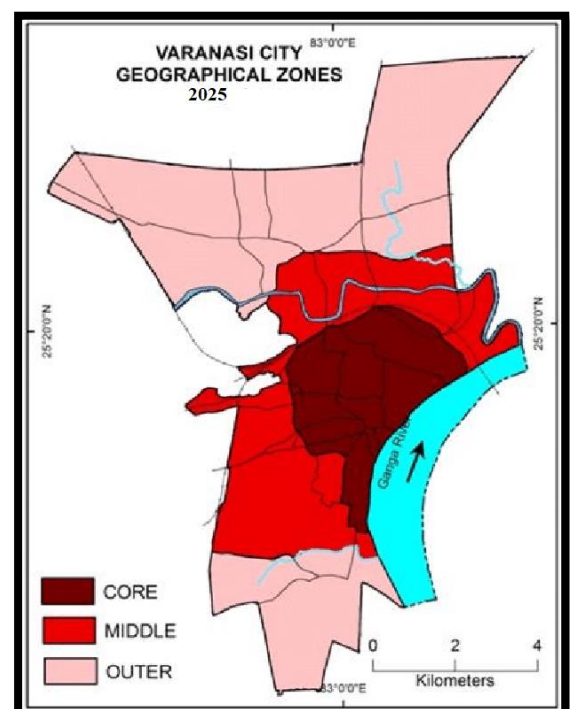
From a geomorphological perspective, the city historically expanded within the boundaries set by two seasonal rivers—the Varuna in the north and the Assi in the south. This gave rise to the spatial classifications of Cis-Varuna (within these boundaries) and Trans-Varuna (beyond them). The Cis-Varuna zone remained the principal area of habitation until the late 19th century, when infrastructural projects—such as railway connectivity, masonry bridges, and road networks—facilitated suburban development northward into the Trans-Varuna region (Singh & Rana, 2019; VDA, 2015).

Colonial mapping exercises, such as James Prinsep's surveys (1822–1825) and later cadastral maps of the early 20th century reveal the layered spatial imprint of successive political regimes. The British period saw the introduction of planned administrative enclaves, civil lines, and institutional campuses, particularly in the central zone, thereby initiating a morphological transition from purely organic growth patterns to hybridized forms. The establishment of Banaras Hindu University (BHU) in 1916 consolidated the city's role as a modern centre of education, while the preservation of Sarnath as a Buddhist archaeological site integrated heritage conservation into the urban development agenda.

The heritage–modernity interface in Varanasi is most visible along the Ganga riverfront, where ancient religious infrastructure coexists with contemporary tourism services, and in the Central City, where colonial-era buildings abut informal markets. Peripheral expansion, while easing density pressures in the core, has also triggered challenges—particularly in maintaining the integrity of the historic urban landscape amid increasing real-estate pressure, vehicular congestion, and infrastructural strain.

In morphological terms, Varanasi's current urban form is a palimpsest—a spatial manuscript inscribed and reinscribed by centuries of religious practice, mercantile exchange, colonial intervention, and post-independence modernization. Understanding these layers is crucial not only for urban heritage conservation but also for future spatial planning that respects the city's cultural–historical identity while accommodating its functional needs.

VI. URBAN COMPLEXITY AND CULTURAL FRAGILITY OF THE OLD CITY OF VARANASI





The old city of Varanasi represents a deeply layered and complex urban morphology, shaped by centuries of religious significance, pilgrimage traditions, and spatial adaptations. Despite ongoing transformations, the historical core continues to retain its symbolic and architectural ethos. The dense built environment along the ghats—particularly in areas such as Chachori Gali, Vishwanath Gali, Hara ka Sarai, Chatta Tale, Thatheri Bazaar, and Chowk—demonstrates a unique form of vertical and horizontal compression, resulting from centuries of religious pilgrimage and spatial accretion (Gutschow & Michaels, 2005; Singh & Rana, 2019).

The built environment adjacent to the ghats is not merely a result of urban necessity but reflects a sacred geography, where religious function and spatial form are intertwined. The narrow lanes form a labyrinthine network leading directly to the ghats, with temples, shrines, dharamshalas (pilgrim dormitories), small-scale commercial outlets, and informal religious spaces embedded into the streetscape. Scattered throughout this urban matrix are innumerable Shivalingam shrines, often nestled in alley corners and inner courtyards—each still actively worshipped, often with a daily offering of flowers or ritual acts by local devotees (Eck, 1982). These informal sacred sites highlight the persistence of ritualized space within a highly urbanized setting.

However, the increasing pressure from mass tourism, infrastructural modernization, and demographic expansion is now straining the fragile cultural and ecological balance of the old city. The carrying capacity of the ghats and the riverfront ecosystem is under severe stress, driven by both a growing permanent population and a massive floating population of pilgrims and tourists (Tiwari & Kanchan, 2024). The physical dimensions of the old city—often with streets just wide enough for two people to pass shoulder-to-shoulder—cannot accommodate the volume of contemporary human and vehicular movement, leading to congestion, loss of visual integrity, and degradation of the urban skyline (UNESCO, 2013).

In addition, inadequate sanitation and waste management infrastructure in high-density zones have worsened the environmental and public health situation, particularly during religious festivals. The phenomenon of unplanned and uncontrolled tourism development poses a significant threat to the cultural carrying capacity of the sacred core, eroding both the tangible built heritage and the intangible atmosphere that defines the character of Kashi (Das et al., 2024). As such, the traditional cityscape of Varanasi, while resilient, now stands at a crossroads where thoughtful heritage-sensitive urban management is essential to prevent irreversible cultural and environmental degradation.

VII. URBAN EXPANSION IN THE PROXIMAL ZONE: GROWTH DYNAMICS BEYOND THE CITY CORE

The areas immediately adjacent to the historic core of Varanasi are experiencing intense development pressures, primarily due to their proximity to cultural landmarks, comprehensive service availability, and administrative significance. These transitional urban fringes, often referred to as "proximal areas" in urban planning literature, function as vital interfaces between the densely packed old city and the expanding modern periphery (CDP Varanasi 2041, 2021). The locational advantage of these zones has attracted increasing residential and institutional development, making them key sites in the spatial evolution of the city.

The northern stretch of this proximal zone, notably in the Trans-Varuna region, has developed into a mixed residential and institutional belt. This includes well-established neighborhoods such as Patel Nagar, Kachehri, Civil Lines, and the Cantonment area, which historically housed officers, traders, and administrative elites (Jha & Tripathi, 2019). The spatial character of these zones is notably more ordered and planned than the organic morphology of the old city.

Over the past three decades, urban expansion in Varanasi has led to the development of numerous planned residential colonies in areas such as Ravindrapuri, Sunderpur, Nevada, and Nagwa, particularly in proximity to Banaras Hindu University (BHU). Further extension has occurred in neighborhoods like Kakarmatta, Kamachchha, Mehmorganj, Sagra, Maldahiya, Pahariya, and Pandeypur, reflecting both population growth and land value escalation in the inner periphery (Singh & Rana, 2019). These localities now host a large number of government offices, educational institutions, and commercial facilities, thus shifting the city's functional center of gravity beyond the traditional core.



The dynamic urbanization in the proximal zone also reflects the spatial impact of state-led infrastructural investments, real estate speculation, and educational migration. However, this rapid growth raises concerns regarding zoning enforcement, traffic congestion, and environmental stress—necessitating a more integrated and sustainable approach to physical planning and growth management in these interface regions.

VI.II. PLANNED PERIPHERAL EXPANSION AND INFRASTRUCTURAL CATALYSTS IN VARANASI'S URBAN GROWTH

The peripheral zones of Varanasi, particularly those encompassed within the extended municipal ward boundaries, exhibit a development trajectory distinct from the organic and congested growth patterns of the historical core and intermediate zones. These outer fringe areas are increasingly favored by residents due to their comparatively planned spatial layouts, improved infrastructure, and regulated land use, facilitated largely by state-led initiatives (VDA, 2021). The Varanasi Development Authority (VDA), in coordination with the Uttar Pradesh State Housing Board, has spearheaded several housing and infrastructural schemes in these areas to accommodate the city's expanding population and growing middle class (Jha & Tripathi, 2019).

With greater availability of land, modern planning tools, and lower density levels, the peripheral zones have evolved into well-organized residential clusters. However, despite the physical order, these areas often suffer from a deficit in recreational and green spaces, which may impact long-term sustainability and livability (Singh & Rana, 2019). The lack of open public spaces points to an infrastructural imbalance, where housing and road construction have been prioritized over environmental and social amenities.

Key infrastructure projects are acting as catalysts for accelerated urban growth in these peripheral regions. Foremost among them is the proposed Northern Ring Road, expected to substantially boost development in the northern periphery by enhancing connectivity and land accessibility. Simultaneously, the expansion of arterial roads and linkages to National Highways (NH-2 and NH-56) on the city's southern and western margins has already triggered rapid residential and commercial sprawl. Additionally, the proposed Transport Nagar in the western extremity and strategic connectivity initiatives across the Ganga River—linking the eastern bank localities of Ramnagar and Mughalsarai—are further contributing to the horizontal expansion of Varanasi beyond its traditional administrative core (CDP Varanasi 2041, 2021).

This pattern of peripheral growth, although highly structured, raises crucial questions regarding urban governance, ecological balance, and equitable service provision. As Varanasi continues to urbanize outwardly, planning authorities must ensure that future development integrates sustainability principles with accessibility, equity, and environmental resilience.

VI.III. COLONIAL INTERVENTIONS AND SPATIAL TRANSFORMATION OF 19TH-CENTURY URBAN OF VARANASI

The second half of the 19th century marked a pivotal phase in the urban evolution of Varanasi, characterized by the intensification of built form, spatial reconfiguration, and colonial infrastructural interventions. One of the most visible changes during this period was the gradual replacement of traditional kachcha housing with permanent pakka structures, particularly in the riverfront areas. Vacant plots near the Ganga were rapidly occupied by masonry buildings, leading to a densification of the core sacred zone and a transformation of its spatial character (Singh, 2017).

Simultaneously, several water bodies that once served as essential ecological and cultural features were systematically drained and filled to facilitate urban expansion. The Godaulia Nala, Misra Pokhra Jhil, Maidagin Tank, and Machhodari Tank—which had been vital elements of the city's traditional hydrological system—were eliminated or restructured. Notably, the Maidagin Tank was replaced by a colonial-style green space, later known as the Company Garden, situated north of the present-day city center. Similarly, the Machhodari Tank was drained through an underground channel into the Ganga, and its site was redeveloped as a public park with a central ornamental reservoir (Gutschow & Michaels, 2005; VDA, 2015).

The emerging Dasashwamedh Road, laid over the filled-in Godaulia Nala, became a prominent urban corridor and a central axis of colonial city planning. Perhaps the most significant spatial intervention of the British period was the development of the Cantonment and Civil Lines areas, located respectively to the south and north of the Grand Trunk Road. Although their foundation had been laid earlier, large-scale development occurred in the latter half of the 19th century, with the emergence of suburban bazaars, hotels, missionary institutions, jails, and churches, contributing to the distinctly segregated “white town” character of colonial Varanasi (Bayly, 1983).

To support the growing administrative and trade needs of the colonial regime, infrastructural connectivity improved significantly. Bridges were constructed across the Varuna River at Chaukaghat and near the Civil Courts, facilitating access between the older quarters and the newly expanding suburbs like Pandeypur and Hukulganj, where small bazaars began to emerge. By the end of the 19th century, railway connectivity had been established, connecting Varanasi with the broader colonial trade and administrative network (Singh & Rana, 2019). This era also witnessed road-widening projects, demolition of congested housing clusters, and the construction of broad arterial roads such as the Dashashwamedh–Luxa Road and the north–south Chauk Road, reshaping the circulation patterns of the city.

The cumulative effect of these interventions was a gradual transformation of Varanasi from a predominantly sacred pilgrimage town into a hybrid colonial city, where traditional morphology coexisted—often uneasily—with modern planning ideals. This period laid the foundation for the contemporary spatial form of the city, even as it triggered long-term challenges in balancing heritage preservation with urban development.

VI.IV. INFRASTRUCTURE, INSTITUTIONAL EXPANSION, AND SPATIAL GROWTH IN VARANASI: LATE 19TH CENTURY TO CONTEMPORARY URBAN EDGE

The last quarter of the 19th century marked a decisive turning point in the transformation of Varanasi’s cultural and urban landscape, driven by the introduction of colonial infrastructure and public institutions. The establishment of railway connectivity through the Northern and North Eastern Railway branches, along with the construction of a rail bridge near Rajghat, significantly enhanced the city’s integration into the regional and national transport grid (Bayly, 1983; VDA, 2015). These infrastructural advancements, coupled with the installation of waterworks, sewerage systems, and drainage networks, not only improved public health and sanitation but also reshaped the physical and functional form of the city (Singh & Rana, 2019).

This phase of modernization witnessed the proliferation of public institutions and social welfare establishments, including hospitals, orphanages, clubs, dharamshalas, and educational centers, which collectively contributed to the social development of the urban populace. A landmark development during this period was the founding of Banaras Hindu University (BHU) by Pandit Madan Mohan Malaviya, whose vision for higher education culminated in the creation of a planned, semi-circular academic township on the city’s southwestern periphery. This institution not only altered the city’s spatial orientation but also anchored Varanasi’s identity as a modern centre of learning and cultural renaissance (Dwivedi, 1994).

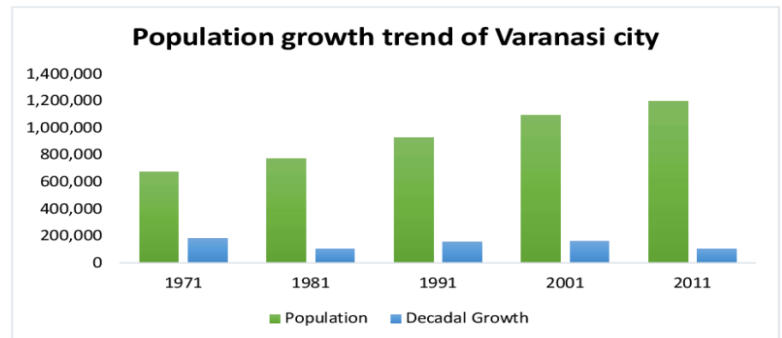
Along the riverfront, the 84 ghats continued to serve as symbolic thresholds between the sacred waters of the Ganga and the dense urban fabric. Infrastructure along the river also evolved, including the establishment of a water pumping station at Hhadaini Ghat and the construction of the Dufferin Bridge (now Malviya Bridge), further facilitating urban connectivity and utility services.

In recent decades, remote sensing and satellite imagery analyses indicate that the city’s spatial expansion has been most prominent in the northern and northwestern peripheral zones, especially beyond the Varuna River and toward Sarnath, a major religious and archaeological site. Comparative spatial data from 2003 and 2013 show significant outward urban growth into previously semi-rural landscapes, accompanied by densification in the central city zones (Dutta & Banerjee, 2024). This peri-urban expansion reflects the broader pressures of population increase, real estate development, and institutional sprawl, while raising urgent concerns about managing sustainable growth beyond the historic urban core.

The land use dynamics of Varanasi have undergone substantial transformation over the past few decades, guided by successive master plans and an expanding planning jurisdiction. The Varanasi Development Area has been divided into Zone A (left bank of the Ganga, including BHU and the Varanasi municipal limits) and Zone B (right bank, including Ramnagar and Mughalsarai). Under the 1991 Master Plan, the total planning area was 14,494.4 ha, with 80% (11,662.34 ha) developed—predominantly residential (38%), followed by parks and playgrounds (19%) (VDA, 1991).

VI.V. EVOLVING LAND USE PATTERNS IN VARANASI: A COMPARATIVE ANALYSIS OF MASTER PLANS (1991–2031)

The Master Plan 2011 expanded the jurisdiction to 18,449.95 ha, while the Draft Master Plan 2031 further extended it to 246 sq. km, formally integrating Zone B. Despite the increase in planning



area, residential land use has only marginally grown by 0.3%, while significant gains have been recorded in transportation and recreational spaces, reflecting a shift toward improved mobility and urban livability (VDA, 2021). While the land use proposals largely align with the URDPFI Guidelines (2014), industrial and public/semi-public allocations remain understated. Cottage industries, which dominate Varanasi’s economy, often function within mixed-use residential and commercial zones, resulting in a higher actual footprint of industrial activity than officially demarcated (Jha & Tripathi, 2019). This discrepancy calls for more nuanced land use planning that integrates informal economies and mixed-use realities within the formal spatial framework.

VII. RESIDENTIAL LAND USE

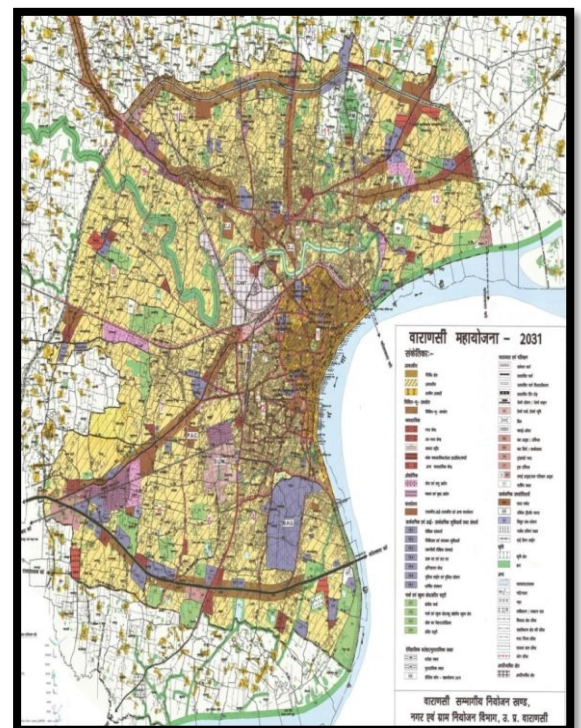
Although the residential area was projected to increase sharply in 2011 (to 9254.61 ha, i.e., 50%), actual use remained almost unchanged at 5476.44 ha. However, by 2031, a more substantial increase to 9886.54 ha (40%) is projected. This aligns reasonably with URDPFI guidelines (35–40%), although earlier projections overestimated actual development, suggesting limitations in execution.

VII.I. MIXED USE AND COMMERCIAL AREAS

The introduction of mixed-use zoning (759.83 ha, 3%) in 2011 reflects a contemporary planning approach to accommodate urban hybridity. Commercial land use is projected to increase from 2% (2011 actual) to 4% (2031), aligning with the URDPFI benchmark (4–5%), addressing rising commercial activity within emerging suburbs.

VII.II. INDUSTRIAL LAND USE

Industrial allocation has seen a decline—from 981.37 ha (7%) in 1991 to a proposed 515.56 ha (2%) in 2031, well below the URDPFI’s 12–14% recommendation. This underrepresentation may stem from the predominance of home-based and cottage industries, often unaccounted for in formal zoning due to their location within mixed or residential zones (Jha & Tripathi, 2019).



VII.III. PUBLIC AND SEMI-PUBLIC FACILITIES

Source: <https://vdavns.com/master-plan>

There is a marked increase in this category—from 3% in 1991 to 9% by 2031, indicating a growing emphasis on institutional and social infrastructure in response to population growth.

VII.IV. RECREATIONAL SPACES

After a temporary decline in the 2011 plan, the proposed 19% allocation for recreation in 2031 restores conformity with URDPFI norms (20–24%), highlighting renewed policy focus on green and open spaces.

VII.V. TRANSPORT INFRASTRUCTURE

The most significant proportional growth is in transportation land use, rising from 1300.27 ha (9%) in 1991 to 3442.5 ha (14%) in 2031, reflecting the increasing demand for mobility infrastructure amid urban expansion.

VII.VI. TOURISM, HERITAGE, AND SERVICES

The inclusion of Tourism and Heritage (440.42 ha, 5%) and Urban Services (141.2 ha, 1%) in 2031 indicates a diversification in land use planning, although the heritage allocation appears limited considering Varanasi’s global religious and cultural significance.

Sr. No.	Land Use Category	URDPFI Guidelines (%)	1991(Area in Ha / %)	2011 (Proposed)(Area in Ha / %)	2011 (Actual)(Area in Ha / %)	2031 (Proposed)(Area in Ha / %)
1	Residential	35–40%	5457.24 / 38%	9254.61 / 50%	5476.44 / 57%	9886.54 / 40%
2	Mixed Use	-	-	-	-	759.83 / 3%
3	Commercial	4–5%	475.10 / 3%	618.23 / 3%	233.21 / 2%	1099.54 / 4%
4	Industrial	12–14%	981.37 / 7%	656.19 / 4%	281.78 / 3%	515.56 / 2%
5	Public/Semi-Public	14–16%	450.42 / 3%	1413.04 / 8%	719.00 / 7%	2339.33 / 9%
6	Recreational	20–24%	2705.76 / 19%	984.47 / 5%	775.54 / 8%	4652.70 / 19%
7	Services	-	-	-	-	141.20 / 1%
8	Government Land	-	292.18 / 2%	1433.15 / 8%	233.50 / 2%	503.34 / 2%
9	Tourism & Heritage	-	-	672.96 / 4%	440.42 / 5%	92.40 / 0%
10	Transportation	15–18%	1300.27 / 9%	1460.35 / 8%	1029.50 / 11%	3442.50 / 14%

11	Others	-	-	273.50 / 1%	273.50 / 3%	571.05 / 2%
	Total	100%	14494.40 / 100%	18449.95 / 100%	9624.13 / 100%	24645.99 / 100%

Source –URDPFI guidelines, 2014, Master Plan 2011 and Master Plan 2031

VIII. FINDINGS

The Old City of Varanasi, characterized by its compact built fabric and extremely high population density, is facing acute urban congestion, resulting in unregulated growth, infrastructural stress, and deterioration of living conditions. The chaotic development pattern in this heritage-rich core necessitates strategic decongestion interventions to ensure sustainable urban living and heritage conservation (Singh & Rana, 2019).

One feasible strategy involves the development of planned peripheral townships on available land beyond the traditional urban limits. These new settlements could be targeted for voluntary relocation of residents from congested zones, supported through incentive-based schemes such as subsidized housing, improved public amenities, and employment opportunities. This would ease pressure on inner-city infrastructure while facilitating structured urban growth (NIUA, 2020).

Given the limited scope for horizontal expansion in the city core due to land scarcity, vertical development via increased Floor Area Ratio (FAR) may be considered. However, such densification must be approached cautiously, as it may overburden existing infrastructure, including water supply, sewerage, waste management, and road networks, if not accompanied by proportionate infrastructure enhancement (MoHUA, 2014).

The city's future growth must also consider expanding across the Ganga River, particularly toward the eastern bank, where land availability is greater. For such eastward expansion to be viable, significant investments are required in connectivity infrastructure, including bridges, arterial roads, and public transportation systems.

Simultaneously, the enhancement of urban green spaces is essential for improving environmental quality and urban resilience. The creation of parks and playgrounds in dense neighborhoods can serve dual purposes—not only as recreational and ecological assets, but also as sites for underground community parking facilities, addressing both land scarcity and parking challenges in the urban core.

IX. CONCLUDING REMARKS

In the institutional framework of Varanasi's urban governance, planning and building regulation responsibilities continue to be centralized under the authority of the Varanasi Development Authority (VDA). While the Varanasi Municipal Corporation (VMC) holds a nominal position within the Plan Sanctioning Committee, its role in the actual urban planning and plan preparation processes remains minimal. The involvement of the VMC is largely procedural, limited to issuing No Objection Certificates (NOCs) for planning permissions within its municipal limits (VDA, 2021).

Despite increasing calls for decentralization and participatory planning, the State Government of Uttar Pradesh has reaffirmed its stance that the planning functions will remain with the VDA, which was constituted under the U.P. Urban Planning and Development Act, 1973. According to the state's position, the VDA possesses the statutory and technical capacity required for comprehensive planning, whereas building similar competencies within the VMC is considered institutionally and administratively challenging (NIUA, 2020).

This division of responsibilities has led to a fragmented governance structure, potentially affecting coordination, implementation efficiency, and local responsiveness in planning processes. Bridging this gap through institutional integration, shared databases, and collaborative planning mechanisms remains critical for effective urban growth management in Varanasi.



In Varanasi, the urban planning and building regulation functions are entirely retained by the Varanasi Development Authority (VDA), with the Varanasi Municipal Corporation (VMC) playing no substantive role in spatial planning or urban design processes. As previously noted, the VMC lacks active involvement in the formulation of master plans, land use proposals, or strategic growth policies. Its contribution is limited to procedural approvals, such as issuing No Objection Certificates (NOCs) within its jurisdiction (VDA, 2021). The functional responsibilities shared between the VDA, VMC, and other parastatal agencies, highlighting the fragmented and siloed nature of institutional roles in the city's planning ecosystem. Notably, the VDA also oversees the planning, design, and construction of settlements intended for the urban poor, including low-income housing and slum redevelopment initiatives. However, the responsibility for operation and maintenance (O&M) of the infrastructure created under these schemes does not fall under the VDA's mandate. Instead, this function is typically passed on to other local agencies or remains ambiguously assigned, leading to gaps in service delivery and long-term sustainability of such interventions (NIUA, 2020; Jha & Tripathi, 2019).

This disjuncture between planning and post-implementation management points to a critical governance challenge in Varanasi, where institutional fragmentation and limited inter-agency coordination hamper the effectiveness of integrated urban development, particularly in addressing the needs of marginalized communities.

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