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Policy Initiatives and their role in Shaping Urban Growth: Case Study Bengaluru

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Abstract

Policy initiatives are regarded as crucial tools for steering growth and development in urban areas. These initiatives shape growth strategies and facilitate the spatial, economic, and social transformation of cities. Many dynamic and thriving cities are the result of thoughtful and well-implemented policy measures. Indian cities, like their global counterparts, have progressed and prospered through such tailored policy frameworks.

In the case of Bengaluru, popularly known as India's Silicon Valley, policy interventions have played a pivotal role in shaping its urban and economic landscape. This paper examines the interplay of policy measures, urban planning, and stakeholders' participation that have influenced Bengaluru's trajectory. The analysis draws from the existing literature on the economic growth of urban centres and findings from relevant studies and presentations on Bengaluru. Recommendations are also provided for ensuring sustainable and resilient urban growth.

Keywords

Resilient growth, Urban development, City systems, Economic growth, Bengaluru.

Introduction

Urbanisation is one of the key outcomes of development in the present day. Manifested in the form of concentration of urban population, economic activities, and resource consumption, urban growth is a complex and multifaceted phenomenon, and is influenced by a variety of factors, including economic development, policy measures,

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social dynamics, and technological advancements (Kong, Mu, & Hu, 2022). Urban systems may be considered as interconnected ones, operationally dependent on one another. Urban development and economic growth are closely linked reinforcing and influencing each other mutually in various ways. This relationship is evident across various studies, highlighting how urbanisation drives economic growth and vice versa.

According to Clemente et al., (2020), urbanisation is crucial in the early stages of economic development, enhancing the production and export of goods. However, in highly urbanised countries, the relationship between urbanisation and economic growth becomes less significant (Clemente & Strano, 2020).

According to Frenken et al, economic development can be seen as an evolutionary process where product innovations lead to growth opportunities for cities (Frenken & Boschma, 2007). Pradhan et al opine that effective urbanisation policies must include the development of transportation and ICT infrastructure to avoid negative side effects like congestion and unwanted growth of slums, which can hinder economic growth (Pradhan, Arvin, & Nair, 2021). According to Brunt et al, urbanisation can lead to technological change and productivity growth by facilitating knowledge exchange and innovation, creating a positive feedback loop between city size and productivity, thereby creating positive impacts for both urban development and economic growth (Brunt & García-Peñalosa, 2022).

Human capital spillovers, infrastructure development, and effective urban policies are crucial for maximising the economic benefits of urbanisation. This paper aims to study and analyse the policy initiatives introduced in Bengaluru over the past three decades. It also highlights systemic gaps and the emerging risk profile, demonstrating that current policy interventions fall short of addressing the city's growing demands. It argues that more proactive, comprehensive, and multi-sectoral policy approaches are urgently needed to ensure Bengaluru's long-term, resilient growth.

Aim and Objectives

The primary aim of this paper is to analyse the role of policy measures in facilitating and shaping the urban growth of Bengaluru. It seeks to evaluate how policy interventions have influenced the city's economic, spatial, and infrastructural development while addressing challenges associated with rapid urbanisation.

The paper seeks to assess the role of key policy measures in Bengaluru's transformation into an IT and biotechnology hub and explores how industrial policies and urban planning frameworks have driven spatial and economic growth; it examines the socio-economic and environmental challenges resulting from Bengaluru's rapid urban expansion and analyses the infrastructure gaps in housing, healthcare, education, and transportation; and lastly, it investigates policies and practices aimed at enhancing Bengaluru's resilience to environmental, economic, and social risks and suggests integrated policy measures and governance models that can address the challenges of urban growth in Bengaluru.

Research Methodology

The paper adopts a mixed methods approach including literature review, secondary data analysis, case study analysis to establish the role of policies in channelising urban growth. It analyses, existing research papers, policy documents, and urban development plans to understand the trajectory of Bengaluru's growth. It further focuses on studies that examine the intersection of economic growth, spatial development, and policy measures in Bengaluru. Utilising the data from census reports, government publications, and master plans (e.g., Revised Master Plan 2031) this paper evaluates the demographic and spatial trends in Bengaluru. It reviews economic indicators, such as contributions to state GDP and employment patterns, to assess the impact of policies. It examines Bengaluru's urban growth as a case study to identify the key drivers and outcomes of policy interventions and highlights specific examples such as the establishment of IT parks, industrial clusters, and urban resilience policies. It further evaluates the interlinkages between these themes to present a holistic understanding of Bengaluru's growth dynamics.

Bengaluru and its Emergence as a Prominent Urban Centre

Cities serve as engines of economic activity and hubs for innovation, playing a critical role in shaping regional and national development trajectories. Bengaluru earlier known as Bangalore, exemplifies the interplay of these forces, having transformed over decades into one of the most dynamic urban centres of India. Known as the Silicon Valley of India, Bengaluru's growth narrative highlights how deliberate policy interventions and strategic planning can propel urban expansion while fostering economic and technological leadership.

Nestled on the Deccan Plateau at an altitude of approximately 900 meters above sea level, the city enjoys a favourable climate and geographic location, contributing to its appeal as a business and innovation hub. (Please refer Figure 1: Location of Bengaluru). Over the years, Bengaluru has transformed from a modest trading town into a global metropolis, with rapid urbanisation and development marking its evolution. The city is a leading IT Services Export zone, employing approximately 35 per cent of IT/ITeS workforce of the country. It is one of the biggest bio-technology cluster in India and includes nearly 40 per cent of total such units across the country. It is home to the largest Industrial Cluster in Asia with 5000+ industries accommodating more than 5 lakh employees. Nearly 33.8 per cent of Karnataka state's GDP is achieved from Bengaluru.

Historically, Bengaluru's evolution has been marked by distinct phases of growth. In the post-Independence era, the city gained prominence as a hub for public sector undertakings (PSUs), which laid the foundation for its industrial base and urban development (Dey & Pendharkar, 2019). The liberalisation of India's economy in the 1990s ushered in a new era for Bengaluru, positioning it at the forefront of the

Global Information Technology (IT) Revolution. Today, the city is not only a leading IT exporter but also a centre for biotechnology, aerospace, and research-driven innovation. Its trajectory demonstrates how tailored policy measures can create a conducive environment for industry growth, attract global investment, and sustain urban expansion (Carlson, 2018).

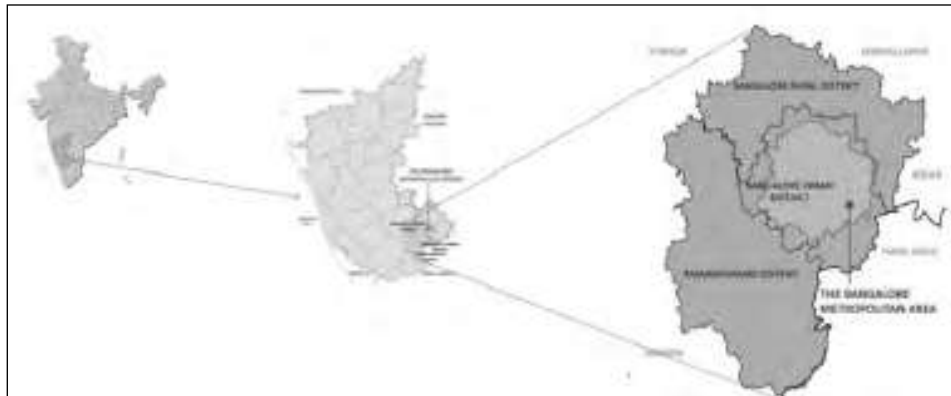


Figure 1: Location of Bengaluru.

Source: Revised Master Plan for Bengaluru-2031 (Draft) (Bangalore Development Authority).

However, this rapid growth has not been without challenges. Issues such as infrastructure bottlenecks, environmental degradation, housing shortages, and socio-economic disparities have emerged as pressing concerns. These challenges underscore the need for comprehensive policy frameworks that address the interconnections between economic activities, spatial development and the social fabric of urban centres.

Bengaluru's Growth Trajectory

From Independence till Liberalisation (1991)

The years following India's independence were a period of rebuilding and capacity-building, with an emphasis on achieving economic self-reliance and reducing dependence on foreign imports. During this time, the government adopted a centrally planned approach, focusing on establishing Public Sector Units (PSUs) to spearhead industrial development. Bengaluru emerged as a key hub for these efforts, primarily due to its strategic inland location, which offered security against foreign attacks, and its favourable climate, which was conducive to industrial operations.

The government set up large-scale PSUs in Bengaluru across various sectors, including aerospace, electronics, heavy machinery, and telecommunications. Major PSUs like Hindustan Aeronautics Limited (HAL), Bharat Electronics Limited (BEL), Indian Telephone Industries (ITI), and Bharat Earth Movers Limited (BEML) were established in the city. These organisations not only brought industrial activity to

Bengaluru but also laid the foundation for the city's economic growth and urban expansion (Carlson, 2018).

PSUs provided stable and well-paying jobs, offering high wages, pensions, and other financial benefits. This created a sense of economic security for employees and stimulated local economies by increasing disposable income amongst residents.

PSUs developed large housing colonies for their employees, creating planned urban settlements. PSU-operated hospitals catered not only to employees and their families but also extended services to the general public. Many PSUs set up schools and vocational training centres to ensure education for workers' children and skill development for future generations. A unique feature of this era was the collaboration between PSUs and educational institutions. Training programmes, apprenticeships, and partnerships with technical colleges ensured a steady supply of skilled labour. These programmes also helped integrate local talent into the workforce, fostering socio-economic mobility.

The establishment of PSUs in Bengaluru played a transformative role in shaping its urban landscape. These units led to the development of industrial clusters and self-sufficient townships, which spurred the expansion of the city's boundaries. The growth of PSUs also attracted a diverse population to the city, contributing to its cosmopolitan character and setting the stage for its transition into a major urban centre.

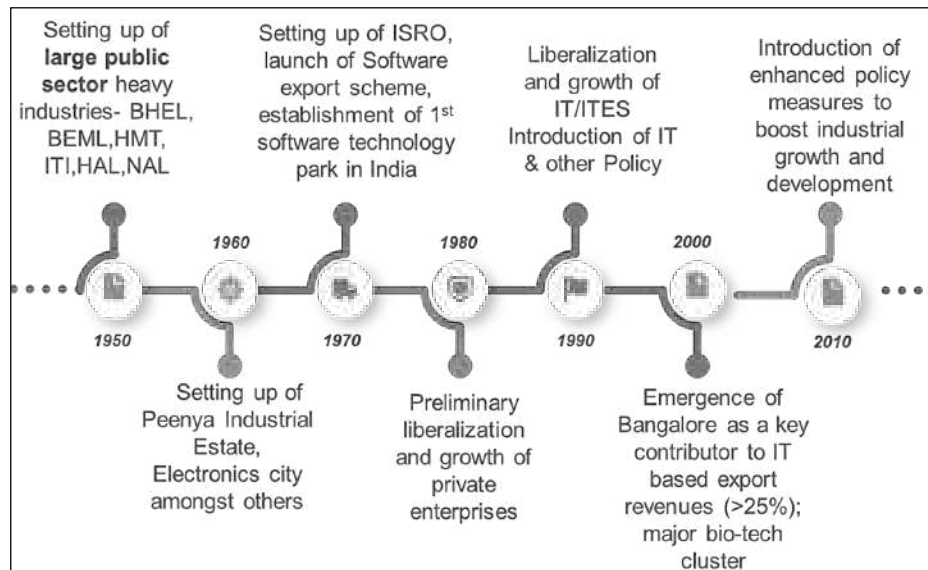


Figure 2: Timeline of Bengaluru's Industrial Growth.

Source: Data compiled by authors from different sources.

From Liberalisation till 2014

The 1990s marked a paradigm shift in India's economic policies with the introduction of liberalisation, privatisation, and globalisation (LPG). This period saw a reduced

role of the state in industrial production and a shift towards enabling private enterprise and foreign investment. Bengaluru, which already had a strong industrial base and a skilled workforce, was well-positioned to take advantage of these policy changes. The government and private sector collaborated to establish India's first Software Technology Park in Bengaluru in 1991. This initiative provided state-of-the-art infrastructure, tax benefits, and streamlined regulations to encourage IT companies to set up operations. Several government policies were introduced to boost the IT sector, including export promotion schemes, Special Economic Zones (SEZs), and technology incubators. Industrial clusters such as Peenya Industrial Estate and Electronics City became hubs for IT and IT-Enabled Services (ITeS) firms. Liberalisation policies encouraged private investments, enabling multinational companies like Infosys, Wipro, and Texas Instruments to establish offices in Bengaluru. This influx of global companies brought capital, technology, and expertise to the city, reinforcing its position as an IT powerhouse.

The IT boom in Bengaluru catalysed rapid urban expansion with the city witnessing an influx of migrants from across India, drawn by employment opportunities. The demand for office spaces, residential areas, and improved connectivity led to the development of IT corridors, new neighbourhoods, and road networks. Bengaluru became a globally recognised brand as the "Silicon Valley of India," hosting international conferences and attracting Foreign Direct Investment (FDI).

While the IT revolution brought prosperity, it also exposed gaps in urban planning and infrastructure. Issues such as inadequate public transportation, housing shortages, and environmental degradation began to surface, necessitating new urban policies and frameworks to manage growth sustainably (Srinivas, 1999).

From 2014 till date

Following 2014, as the Government of India introduced a renewed urban development agenda at the national level, Bengaluru simultaneously experienced significant transformations across its spatial and economic landscapes. A notable manifestation of this change has been the expansion of peri-urban areas, particularly visible in *talukas* such as Devanahalli, where the share of non-agricultural land increased from approximately 13 per cent in 2001–02 to 22 per cent by 2015–16—indicating a steady annual growth rate of 2.8 per cent. This trend underscores a rapid process of urban sprawl and conversion of agricultural land to urban and industrial uses.

The evolving spatial dynamics of the city have been paralleled by livelihood transitions, as communities in peri-urban areas increasingly shifted from traditional agriculture-based occupations to non-farm employment. This reflects the growing economic integration of peri-urban belts into the broader metropolitan economy.

In the fiscal year 2025, the Government of Karnataka allocated ₹7,000 crore for Bengaluru's infrastructure enhancement, marking a significant commitment to support

the city's growth trajectory. Major infrastructure projects aimed at strengthening peri-urban connectivity and regional integration are currently underway. Key initiatives include:

- Bengaluru–Chennai Expressway, which is expected to enhance regional connectivity and catalyse industrial and real estate development across peri-urban zones.
- Peripheral Ring Road (PRR), a 12-lane, 73-kilometre bypass, and the Satellite Town Ring Road (STRR), both envisioned to alleviate inner-city congestion and improve linkages with outer urban belts.
- Mass transit expansion, including Metro Phase 3 Orange Line (ORR-West), connecting industrial nodes such as Peenya, scheduled for completion by 2029; and the Suburban Railway Network, under phased construction, with initial operations anticipated by late 2026–2027 to improve commuter mobility across extended metropolitan regions.

In parallel with physical infrastructure development, institutional and governance reforms have been introduced to streamline urban management and facilitate investment. The Peenya Industrial Area was declared a Special Investment Region (SIR) under the 2022 SIR Act, granting it the status of an industrial township with the authority to reinvest 70 per cent of locally generated taxes into infrastructure development—expected to significantly enhance employment generation. Additionally, the enactment of the Greater Bengaluru Governance Act (May 2025) restructured the Bruhat Bengaluru Mahanagara Palike (BBMP), introducing a new governance framework intended to improve administrative efficiency and accountability.

Collectively, these interventions have transformed Bengaluru's peri-urban areas into active growth corridors and integral components of the city's economic engine. However, the rapid pace of expansion also presents persistent challenges, particularly concerning ecological preservation, coordination across fragmented governance structures, and the equitable distribution of infrastructure benefits. Addressing these issues will be crucial for ensuring sustainable and inclusive urban growth in the years ahead.

Characteristic features of Bengaluru's Urban Growth

Bengaluru's transformation from a quiet, colonial-era town into one of the most dynamic metropolises in the world is a result of planned and organic growth, influenced by industrial development, population migration, and technological advancements. The city's urban expansion is shaped by industrial growth, migration, and technological advancements.

Bengaluru's industrial development laid the foundation for its urban growth. In the post-independence era, PSUs like Hindustan Aeronautics Limited (HAL) and

Bharat Electronics Limited (BEL) were set up, leading to the development of industrial townships and planned layouts. The establishment of Electronics City and Whitefield as IT hubs spurred urbanisation along the peripheries. These areas became focal points for residential and commercial development, contributing to spatial expansion. Industrial estates such as Peenya and the Aerospace SEZ at Devanahalli created new growth corridors that extended beyond the city's traditional boundaries. As regards the pattern of urbanisation, the city has experienced radial growth intensifying from the central core to the periphery, particularly from 1973 to 2010. The city has experienced intense densification in core regions and ribbon and cluster-based development in buffer zones, especially along major roads. (Please refer to Figures 3 and 4).

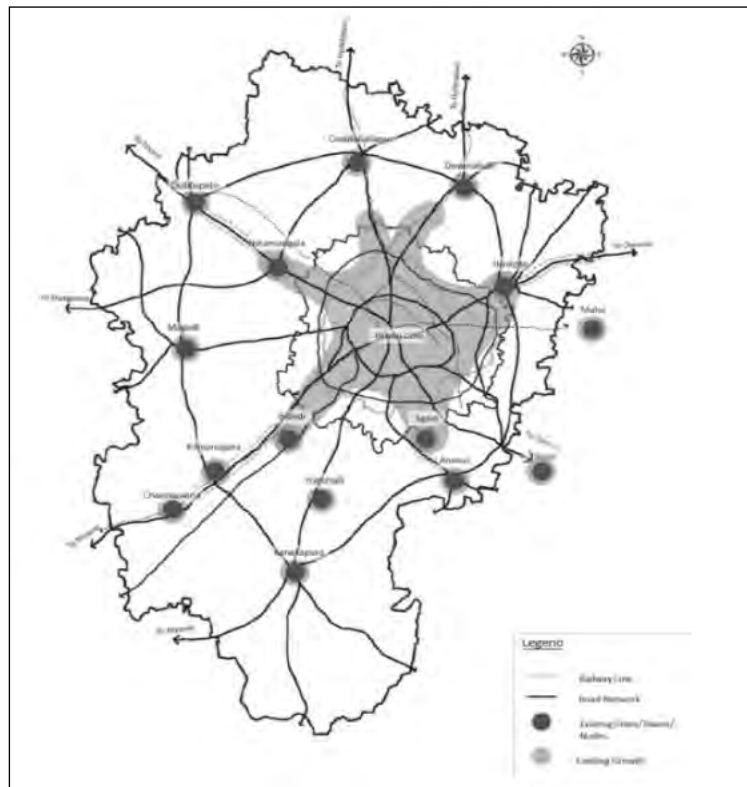


Figure 3: Urban Growth pattern in Bengaluru Metropolitan Region.

Source: Bangalore Development Authority.

As the city centre became saturated, urban expansion increasingly moved towards the peripheries. The Revised Master Plan 2031 indicates that Bengaluru's urban footprint grew from approximately 2,100 square kilometers in 2001 to over 4,900 square kilometers by the 2020s. (Please refer Figure 5). Areas such as Hebbal, Sarjapur, and Yelahanka became new urban centres, driven by housing demand and infrastructure projects. Satellite towns like Bidadi and Hoskote were also developed to ease pressure on the core city (Bangalore Development Authority).

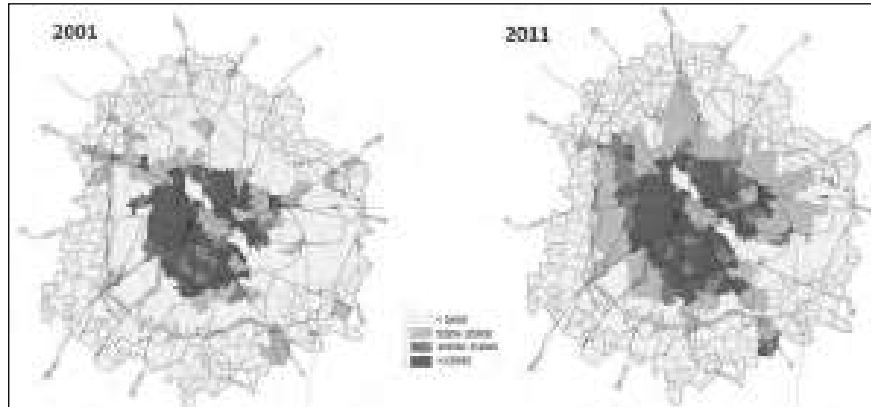


Figure 4: Bengaluru's Decadal Spatial Growth.

Source: Bangalore Development Authority.

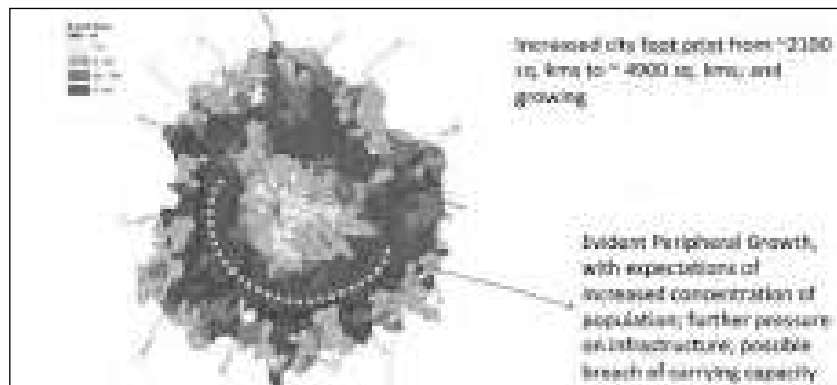


Figure 5: Urban Growth rates in Bengaluru.

Source: Bangalore Development Authority, Analysis by authors.

Bengaluru's urbanisation has been accompanied by significant population growth, as it grew from 5.1 million in 2001 to over 13.1 million in 2023, making it one of the fastest-growing urban areas globally. Migration from across India has made it a cosmopolitan city. IT professionals, skilled labourers, and students form a significant portion of its population.

To support its growing population and industries, Bengaluru has seen significant investments in transportation networks with construction of ring roads, elevated corridors, and the Bengaluru Metro has improved connectivity between different parts of the city. Rapid urban expansion has fueled a real estate boom, with gated communities, high-rise apartments, and commercial hubs transforming the city's skyline.

The rapid urban expansion has also highlighted the disparities between different income groups residing in the city and is visible in form of increased gentrification in the city. It has been observed that with increasing purchasing power, the demand for high-end residential developments has become commonplace, resulting in displaced

lower-income communities in some areas. The resultant demand for affordable housing has culminated in growth of slums and informal settlements on the city's outskirts. Service gaps in terms of adequate access to quality healthcare, education, water supply, waste management, and transportation are widely evident with the city struggling to keep pace with the expanding population.

The explosive urban expansion has come at the cost of the city's natural environment. Once known as the City of Lakes, Bengaluru has seen a dramatic reduction in water bodies due to encroachments and urban development. Urban sprawl has led to the depletion of forests and open spaces, impacting biodiversity and increasing the city's vulnerability to urban flooding. According to a report prepared for Karnataka Lake Conservation and Development Authority (KLCDA) nearly 11 per cent of water bodies in the Bengaluru Metropolitan Area are disused. It has been found that 50 per cent of the water bodies are vulnerable to encroachments. Mostly the water bodies have been encroached for development works. Nearly 55 per cent of the water bodies had solid waste dump (including domestic garbage, C&D waste, etc.). Nearly 30 per cent of the water bodies were contaminated by sewage as well. Presence of granite slurry, evidence of soil excavation and sand mining was also observed in nearly 20 per cent of the water bodies (KLCDA, 2018).

Challenges to Urban Resilience for Bengaluru

Urban resilience refers to a city's ability to withstand, adapt to, and recover from shocks and stresses such as climate change, population growth, resource scarcity, and economic disruptions. Building urban resilience is not just about responding to disasters but also about creating a sustainable, livable, and inclusive city for current and future generations.

For the city of Bengaluru, the vision of building a resilient future entails the recognition of risks or challenges faced by the city. As part of this study, the challenges faced by the city have been assessed on five broad themes, which are detailed below in Table 1.

Table 1: Bengaluru's challenges and required resilience measures

Theme	Factor	Evident Risk/ Challenge in Bengaluru	Required Resilience Measure
Management of natural resources	Access to and protection of natural resources like air, water, land	Evidence of water shortage (due to excessive ground water usage, disruption of natural drainage channels and shrinking surface water sources)	Identification of suitable measures for ecosystem monitoring and prevention in ULB development strategy mechanisms for implementation and successful delivery of these measures

Theme	Factor	Evident Risk/ Challenge in Bengaluru	Required Resilience Measure
		Evidence of landuse change to non-agricultural (potential shortage of cultivable land)	ULB development strategy to identify provisions for ensuring food security for the city
Strength of the local economy	Diverse economic structure and livelihood strategies, access to employment opportunities, diversity of workforce skills, creation of job cluster	System generated risks are not evident; the city however, remains at risk due to national and global crisis	Requisite policy measures needed to integrate economic growth with resilient urban development
Built Environment interventions	Access to appropriate critical infrastructure to support intended economic development, access to basic infrastructure to ensure appropriate standard of living, Streamlined urban growth strategy to ensure planned development	Unplanned urban development leading to imbalanced growth within the city; creating capacity pressures on basic infrastructure facilities	Restructuring measures required to channelise balanced growth in accordance with carrying capacity
		Increased incidence of urban flooding due to blockage of natural drainage channels	Measures for natural drainage protection to be introduced and implemented by ULBs
		134 per cent increase in built-up area with 50 per cent decline in water bodies coverage; created long-term impacts on the natural ecosystem	Conservation of surface water bodies, with adequate guidelines for streamlined urban development to be implemented
Local Governance & Leadership	Stability of local leadership, political will to introduce resilient growth, existence of long-term integrated planning vision, commitment to city-wide resilience strategy focusing on wide mitigative and adaptive capacities	The city does not have a resilience strategy	City growth vision needs to be re-aligned to accommodate the emerging challenges including climate change, etc.

Theme	Factor	Evident Risk/ Challenge in Bengaluru	Required Resilience Measure
		Master Plan, which is the key document signifying long-term city vision and commitment is static and has evidently less room for responding to emergent situations. The process of introducing changes in Master Plan is cumbersome and time consuming	Provisions need to be made in the planning process to ensure city wide response to emerging situation such that regional and global stimuli can be well accommodated in the growth strategy
Interventions for societal well-being	Access to appropriate healthcare, educational and civic infrastructure to support intended economic development, societal measures to ensure gender equality, cultural diversity, access equity and integration of learnings from past experience	There are systemic inadequacies which when coupled with events of acute shock have the potential to cause irreparable damage to the city and its residents	The city's long-term vision needs to ensure the protection of societal well-being with adequate measures embedded to ensure continued performance of these factors

Source: Authors' analysis.

Initiatives to Mainstream Urban Resilience

To address the need for required resilience measures, Bengaluru Climate Action Plan (BCAP) has been initiated. The BCAP is intended to align with the broader developmental goals of the city's Master Plan (also known as the Revised Master Plan, RMP). BCAP focuses on mitigating greenhouse gas emissions, adapting to climate risks, and building long-term sustainability. It seeks to promote public transport, Electric Vehicles (EVs), and non-motorised transit (cycling and walking). It advocates transition to renewable energy sources like solar and wind, while improving energy efficiency, implementing zero-waste strategies through recycling, composting, and waste-to-energy solutions. The plan recommends water conservation and recycling strategies and also highlights the measures to expand green cover, protect biodiversity, and restore lakes. The plan recommends strengthening of infrastructure to address urban flooding and heat waves. Figure 6 identifies the priority sectors as per BCAP.

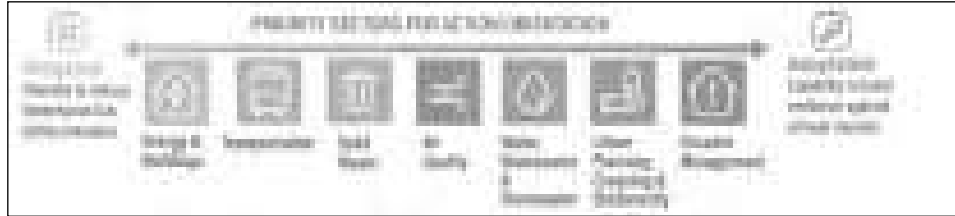


Figure 6: Sectors identified in Bengaluru Climate Action Plan.

Source: World Resources Institute, 2023.

The BCAP thus aims to balance Bengaluru's rapid urbanisation with environmental conservation and climate action.

Discussion

Bengaluru's growth between 1947-91 was shaped by a more conservative, inward-looking approach and was aimed at building capacities of the nation and strengthening the working class. This time period saw investments in enhancing the social infrastructure, education and building industrial capacities of a newly independent nation. From 1991 onwards, with the liberalisation of Indian economy, the focus shifted towards development of nationally, regionally and globally integrated city. Since 2014, Bengaluru has experienced a significant transformation marked by spatial expansion, infrastructure investments, and governance reforms. The city's peri-urban regions, have witnessed rapid land-use changes. This has been accompanied by a shift in livelihoods, as rural populations increasingly engage in non-farm employment, reflecting the integration of peri-urban belts into the city's economic fabric. The Government of Karnataka has reinforced this trajectory through budgetary allocations for infrastructure upgrades, focusing on expressways, ring roads, and mass transit. Simultaneously, economic and institutional reforms have been introduced, which seek to modernise urban administration. While these developments have positioned Bengaluru as a key urban growth engine, challenges persist in managing ecological sustainability, coordinating across fragmented jurisdictions, and ensuring equitable access to infrastructure and services.

Unfortunately, despite the city's financial growth, its spatial development is not in alignment with the expected expansion of such an economically advanced urban centre. At the same time, the city faces increasing urban challenges including flooding and worsening traffic congestion. The city capacity building and resilience action planning measures are few and far apart, often unable to keep pace with the development expectation and increasing population pressures. For example, in the year 2022, heavy rains caused severe flooding in IT hubs like Mahadevapura, Whitefield, and Outer Ring Road. Offices of major tech companies, including Wipro and Infosys, were inundated, leading to operational shutdowns. Despite the urban local body's plan to clear the encroachments on stormwater drains and widening of drains to prevent future floods,

many encroachments are yet to be removed due to legal battles and protests. Similar delays are evident in other major infrastructure upgrades with projects being stalled due to lack of enforcement, land acquisition delays, legal battles and protests.

At present, the city administrators are in the initial stages of building and enhancing resilience through system-based changes; introduced and implemented through planning-based interventions. For example, both the BCAP and the Master Plan emphasise sustainable urban development, but their focus areas differ. While the Master Plan primarily governs land use, zoning, and infrastructure, the BCAP concentrates on reducing emissions, enhancing resilience, and mitigating climate impacts. It is intended that the climate considerations from the BCAP should inform the Master Plan's zoning, transport systems, and resource management.

Moving forward, it is necessary that urban resilience transitions into a focused development goal for the city rather than a perceived outcome which is often assumed to be achieved through the course of development. Bengaluru in particular and other cities in general need to focus on multi-sectoral policy measures that ensure that cities can respond to climate risks, economic pressures, and social inequalities in a holistic manner, fostering sustainable urban resilience for future generations.

To ensure effective integration, the urban resilience measures must be explicitly referenced in the master plans henceforth. The measures need to inform zoning, infrastructure design, and resource management policies. It is imperative that the resilience building measures promote inter-agency collaboration to ensure cohesive implementation.

Way Forward

Bengaluru should adopt a forward-looking 10–15 year Economic Vision Plan that integrates emerging sectors such as artificial intelligence, biotechnology, and green technologies, while strengthening regional linkages with surrounding urban centres like Tumakuru, Kolar, and Hosur. To guide and implement this vision, the city could establish a Bengaluru Economic Council comprising representatives from the technology industry, academic institutions like IISc and IIM Bangalore, civil society, and government agencies. The Bengaluru Development Authority's (BDA) master plan should be strategically aligned with existing and potential economic clusters—such as promoting Whitefield as an innovation hub, Peenya as a manufacturing zone, and Electronic City as a centre for deep-tech industries. Additionally, adopting a region-based planning approach, the city must develop satellite town economic corridors within the larger Bengaluru Metropolitan Region to ensure balanced, distributed, and sustainable economic growth.

Bengaluru's current regulatory landscape is marked by complex, time-consuming approval processes, and investment inflows remain concentrated in select geographies, limiting balanced urban growth. To address these challenges, there is a need to

operationalise a robust single-window clearance platform at the city level, equipped with features such as auto-escalation mechanisms and clearly defined approval timelines to enhance efficiency and transparency. To promote equitable development and reduce pressure on the city core, differentiated incentive schemes should be introduced for peripheral zones, encouraging industrial and commercial investments in these areas. Furthermore, establishing a dedicated City Investment Promotion Cell within the BBMP or BDA institutional framework would help coordinate investor engagement, streamline policy implementation, and position Bengaluru as a more accessible and attractive destination for diverse investments.

To ensure the smooth transition and integration of Bengaluru's rapidly transforming peri-urban areas, it is essential to recognise and regulate the developments through a dedicated institutional mechanism—preferably in the form of a dedicated cell or council which may plan, regulate, and coordinate development in the transitional belt lying between the BDA's current jurisdiction and the outer limits of the BMRDA—covering an approximately 10–15 km radius. The role of such an intervention would be to enhance collaboration between BBMP, BDA, BMRDA, Rural Panchayats, and the Directorate of Town and Country Planning (DTCP), ensuring cohesive governance and planning continuity. Complementing this institutional mechanism, the introduction of a Peri-Urban Zoning Code is crucial. This zoning framework would define distinct categories such as Transition Zones—allowing conditional mixed-use developments through Local Area Plans (LAPs); Agro-Ecological Protection Zones (AEPZs)—strictly designated as no-development areas to preserve farmland, forests, and water bodies; and Planned Urban Extensions—zones earmarked for structured, high-density urban growth with transit-ready infrastructure.

Implementing Decentralised Development Control Regulations (DCR) can streamline planning approvals and improve service delivery. This includes introducing e-clearance systems for layout approvals aligned with peri-urban development guidelines, mandating minimum service standards such as roads, drainage, electricity, and water supply before approvals are granted, and promoting land pooling and reconstitution through cluster development models supported by Floor Area Ratio (FAR) incentives. Moreover, new developments should comply with a Green Infrastructure Mandate, requiring ecological buffers, wetland protection, and urban tree cover. Lastly, an Integrated Infrastructure Rollout Plan should guide phased investments in essential services such as water, sanitation, and mobility based on projected densification. Development should be structured around key nodes along the Satellite Town Ring Road, supported by the early reservation of smart utility corridors to prevent land fragmentation and facilitate future service expansion.

To ensure accountable and informed planning in Bengaluru's peri-urban areas, robust monitoring mechanisms, transparent governance tools, and strong legal backing are critical. A Peri-Urban Growth Observatory should be established to monitor land use changes in real time through satellite imagery, drone mapping, and citizen-

generated reports. This data-driven approach can help detect illegal conversions and track development trends. Complementing this, Public Participation Portals should be launched to facilitate community engagement by enabling grievance redressal, layout validation, and monitoring of compliance with development norms. A Unified Geo-Spatial Land Platform must also be developed to consolidate and verify revenue, planning, and land registration records into a single, integrated digital database, improving transparency and reducing disputes. These mechanisms must be supported by appropriate legal and regulatory frameworks. Amendments to the Karnataka Town and Country Planning Act should introduce a dedicated chapter on peri-urban planning, institutionalising it as a formal planning category. Further, Transferable Development Rights (TDRs) could be employed as an incentive for landowners to preserve agricultural or forest zones within peri-urban belts. Finally, the introduction of a State Peri-Urban Development Policy would provide the legislative foundation for replicating these reforms in other fast-growing urban centres across Karnataka, such as Mysuru and Hubli-Dharwad.

Together, these initiatives would enable a balanced and environmentally sensitive integration of peri-urban areas into the city's larger spatial and economic framework, avoiding fragmented sprawl and promoting sustainable urban expansion.

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Integrated Urban Regeneration through Sustainable Architecture: Policy, Practice, and Impact in Emerging Economies

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Abstract

Urban regeneration in emerging economies represents a pivotal response to escalating urban challenges such as rapid population growth, socio-spatial inequality, and environmental degradation. This study explores the role of sustainable architecture as a transformative enabler in integrated urban regeneration, with India as the focal point. Drawing upon a qualitative thematic analysis, the research incorporates extensive academic literature, including journals like '*Nagarlok*', '*Indian Journal of Public Administration*', and policy documents, as well as international case studies from Brazil, Colombia, South Africa, and the Philippines. The paper not only analyses India's current trajectory but also offers a forward-looking vision for inclusive and sustainable urban transformation. It argues for a reconfiguration of India's urban regeneration paradigm towards a community-driven, climate-adaptive, and design-integrated model. It concludes with policy recommendations advocating integrated governance, empowered urban local bodies, mandatory regional building codes, real-time monitoring systems, community-centric approaches, and financing innovations to achieve holistic and future-ready urban development.

Keywords

Urban regeneration, Sustainable architecture, Emerging economies, Public-Private Partnerships, Climate-resilient cities, Integrated Planning.

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Introduction

Urban regeneration is a transformative process aimed at revitalising cities through a multi-dimensional framework encompassing physical redevelopment, social upliftment, economic stimulation, and environmental improvement. In the context of emerging economies, this process holds profound significance. Rapid urbanisation, population growth, unplanned expansion, and intensifying climate change impacts have overwhelmed existing urban systems. In developed nations, urban regeneration addresses post-industrial decline, depopulation, or aging infrastructure. By contrast, emerging economies focus on equitable access, basic service provision, and climate adaptation, often with limited resources. India, with its accelerated pace of urbanisation and its status as the world's most populous country, represents a critical test case. The country's urban areas face a complex interplay of challenges: a proliferation of informal settlements, overloaded infrastructure, environmental degradation, socio-spatial inequalities, and vulnerability to climate-related events such as heatwaves, flooding, and air pollution. Yet, these very challenges also present opportunities for transformative change. With the right mix of policy direction, institutional collaboration, technological integration, and community engagement, urban regeneration can become a vehicle for sustainable and inclusive growth.

Sustainable architecture is central to this transformative vision. It is not merely an aesthetic or functional approach to building design but a systemic method that bridges environmental stewardship, cultural continuity, and social inclusivity. Architectural strategies such as passive solar design, rainwater harvesting, green roofs, energy-efficient materials, and the adaptive reuse of heritage structures are not just environmentally sound—they also support community identity, reduce operational costs, and increase climate resilience. When integrated with urban regeneration policies, these design approaches help to create urban environments that are livable, equitable, and future-ready.

Moreover, India's regenerative challenges and innovations must be viewed in a comparative international perspective. Many other emerging economies facing parallel issues, such as informal housing, weak urban governance, and environmental degradation, are exploring innovative strategies for sustainable regeneration. Comparative learning from countries in Latin America, Southeast Asia, and Sub-Saharan Africa can reveal both common obstacles and transferable solutions. Cross-regional dialogue can enrich India's own practices and guide the evolution of context-sensitive architectural and policy responses.

This paper explores the interlinkages between urban regeneration and sustainable architecture, with India as the focal case. Through thematic analysis and policy

comparisons with other emerging economies, it investigates how sustainable design can serve as both a technical and socio-political tool for regeneration. The study identifies gaps in current Indian urban policy and practice, showcases successful interventions, and proposes integrated, community-driven strategies that align architecture with the goals of inclusive urban development and climate resilience.

Research Methodology

The research adopts a qualitative thematic analysis approach rooted in interpretive epistemology. This method emphasises the contextual understanding of urban regeneration through multiple data sources, stakeholders' perspectives, and cross-country comparisons. The choice of this methodology is informed by the multidimensional nature of urban regeneration, which encompasses socio-cultural, economic, environmental, and governance-related dimensions that cannot be adequately captured by quantitative techniques.

The study draws on peer-reviewed journals, urban policy documents and global reports from UN-Habitat, World Bank, and South African Cities Network. The sources were selected for their relevance, timeliness, and significant contribution to both theoretical and practical knowledge in the field. Case studies were purposively sampled from Brazil, the Philippines, Colombia, Kenya, and South Africa, reflecting comparable urban challenges such as informal settlements, infrastructural deficits, and climate vulnerability.

Documents were coded using content analysis, with emergent themes categorised into five analytical dimensions: governance and institutions, participatory design, architectural sustainability, financing models, and impact metrics. NVivo software was utilised to assist in coding large volumes of text and organising themes. Triangulation was achieved by cross-verifying insights from academic, policy, and field-based sources, thereby strengthening the validity and credibility of the findings. Thematic saturation ensured reliability in identifying patterns and gaps. Additionally, informal interviews with urban planning professionals and sustainability consultants were conducted to ground the thematic insights in lived experience and practical realities. This methodological pluralism provided a rich and nuanced understanding of urban regeneration dynamics, particularly in the Indian context.

Given the multi-scalar nature of urban regeneration spanning governance, design, community engagement, and environmental systems a qualitative method allows for a holistic examination of diverse data sources and stakeholders' perspectives.

The research methodology flow chart with interlinked aspects is depicted in Figure 1.

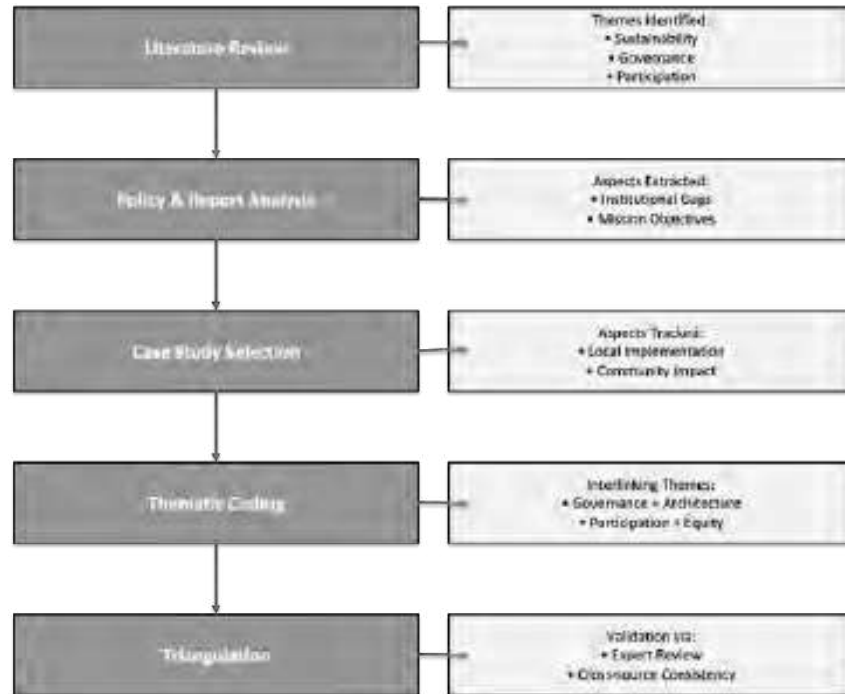


Figure 1: Research Methodology Flowchart with interlinked Aspects.

Source: Adapted from Clarke & Braun (2013), UN-Habitat (2020), and Srivastava & Thomson (2009) on thematic analysis and urban policy evaluation.

Data Collection Strategy

A multi-source data collection strategy was employed to ensure depth, diversity, and triangulation. The sources included:

- **Academic Literature:** Peer-reviewed journals such as *Nagarlok*, *Indian Journal of Public Administration*, and *Journal of Urban Studies* were reviewed to establish theoretical foundations, current debates, and analytical frameworks in urban regeneration and sustainable architecture.
- **Government Policy Documents and Reports:** Documents from Indian urban development programmes—including the *Smart Cities Mission*, *AMRUT*, *PMAY*, and the *National Urban Policy Framework*—provided insights into the policy and institutional landscape.
- **International Publications:** Global best practices and benchmarks were drawn from reports by *UN-Habitat*, *World Bank*, *Global Green Growth Institute (GGGI)*, and *South African Cities Network* to enable cross-country comparison.
- **Case Studies:** Detailed examinations of urban regeneration initiatives in India and comparable economies—such as Brazil, the Philippines, Colombia, Kenya, and South Africa—served to contextualise and contrast India's practices.

Thematic Analysis and Coding Process

Data from these sources were analysed using content and thematic analysis techniques. All documents and case studies were subjected to open coding, with recurring concepts tagged and clustered into thematic categories. These themes were not predetermined but emerged organically through iterative reading and cross-verification. Particular attention was paid to how sustainable architectural elements intersected with broader regeneration goals, such as inclusion, resilience, affordability, and environmental sustainability.

To ensure rigour and validity, data triangulation was employed by cross-referencing findings from academic, policy, and practical sources. This multi-layered approach helped verify recurring issues and successful patterns. Themes were further tested against actual implementation case studies, enabling both abstraction and contextual specificity.

Thematic Framework for Analysis

The study's thematic framework is organised around five interlinked dimensions, each reflecting a critical pillar of urban regeneration and its architectural implications. These dimensions emerged through content synthesis and were refined to ensure analytical clarity and comparative depth:

1. Governance and Institutional Frameworks

Examine the vertical and horizontal coordination among institutions and regulatory agencies. In India, overlapping jurisdictions and fragmented governance often hinder integrated planning. Comparative analysis with Brazil's consolidated housing and urban policy architecture under *Minha Casa Minha Vida* reveals pathways to improve institutional coherence and implementation efficiency (Chattopadhyay, 2021).

2. Participatory Planning and Community-Centric Design

Focuses on the role of local communities in shaping regeneration outcomes. Case studies from India, such as Dharavi and Social work Practices And Research Centre (SPARC) in Pune, highlight tensions between top-down development and grassroots co-design. Comparative insights from Medellín, Colombia, where participatory budgeting and community design redefined regeneration, underscore the transformative potential of inclusive planning (Patel, 2019; Banerjee, 2020).

3. Architectural Sustainability as a Regenerative Tool

Explores sustainable architecture as both a technical and socio-cultural intervention. Practices like passive solar design, use of indigenous materials, and adaptive reuse—championed by institutions such as the Laurie Baker Centre and Centre for Science and Environment—are evaluated in terms of their policy integration and scalability. Comparisons with Southeast Asia's tropical modernism model

demonstrate how climatic specificity and cultural heritage can guide sustainable design (Raghavan, 2022; Centre for Science and Environment, 2022).

4. **Financing Mechanisms and Public-Private Partnerships (PPPs)**

Investigates the financial models underpinning urban regeneration. While India's PPPs have seen success in infrastructure sectors, their application in inclusive regeneration remains limited. The study evaluates instruments such as land value capture, green bonds, and social impact funds. South Africa's use of government-backed housing finance corporations to attract private investment provides a replicable model (Jain, 2023).

5. **Monitoring, Metrics, and Impact Assessment**

Addresses the need for robust monitoring tools to evaluate post-regeneration outcomes. GRIHA (Green Rating for Integrated Habitat Assessment) and IGBC (Indian Green Building Council) are prominent Indian green building rating systems that evaluate a building's environmental performance over its entire life cycle. While both use a points-based system to encourage sustainable practices, they differ in their development, rating thresholds, and specific focus areas. Post-occupancy evaluations are rare, limiting institutional learning. European models of post-regeneration audits provide critical benchmarks, using metrics such as energy consumption, inclusivity indices, and spatial quality of life (Kumar, 2021).

6. **Synthesis and Comparative Analysis**

The five-dimensional thematic framework was used to analyse and compare the Indian experience with selected global case studies. Each dimension was explored through the lens of sustainability, inclusion, and implementation feasibility. The study also draws from critical literature to highlight governance inefficiencies and marginalisation of urban poor in mainstream regeneration strategies.

7. **India-Specific Observations and Gaps**

Despite notable successes under initiatives like the Smart Cities Mission, Indian urban regeneration policies remain hindered by fragmented execution, limited community engagement, and insufficient emphasis on sustainable architecture. While cities like Bhubaneswar have made strides in digital infrastructure and mobility planning, housing and ecological concerns remain inadequately addressed (Singh, 2021). The disconnect between technological innovation and inclusive design limits the transformative potential of these initiatives.

8. **International Case Comparisons – Summary Table**

Country	Key Strategy	Relevance for India
Brazil	Integrated housing & infrastructure	Highlights need for convergence across housing, transport, and tenure
Kenya	Green public buildings	Demonstrates scalability in tier-II/III Indian cities

Country	Key Strategy	Relevance for India
Philippines	Community-led land tenure regularisation	Useful for regularising India's informal settlements
South Africa	Regenerative social housing with PPPs	Model for risk mitigation and private sector involvement

Sources: MDPI (2023), Cities Alliance (2010), World Bank (2020), EDGE Buildings (2023), UN-Habitat (2017), Wikipedia – Community Mortgage Program (2023), ResearchGate (2024), University of Pretoria Repository (2023).

Policy Recommendations

Drawing from the thematic analysis and comparative insights, the following policy recommendations are proposed to guide integrated urban regeneration through sustainable architecture in India:

(i) Institutional Convergence and Integrated Governance

To address fragmentation in urban policy implementation, there is a need to institutionalise convergence across key urban sectors—housing, transport, water, sanitation, and climate resilience. A National Urban Regeneration Council should be established, comprising representatives from relevant ministries and departments, to streamline efforts under a unified framework. This council would be supported by inter-ministerial coordination cells and real-time digital dashboards that facilitate shared data, collaborative planning, and synchronised execution. The use of geospatial and ICT tools can significantly improve alignment between various missions such as AMRUT, Smart Cities, and climate resilience initiatives, leading to more coherent and impactful regeneration outcomes.

(ii) Decentralised Innovation through Empowered Urban Local Bodies (ULBs)

Urban Local Bodies must be given enhanced autonomy to act as key implementers of sustainable urban regeneration. This includes full devolution of functions listed in the 74th Constitutional Amendment, along with adequate fiscal authority and technical staff. Strengthening ULBs through dedicated urban planning and architecture units at the ward or city level will allow for context-specific, innovative solutions. States must reform municipal laws and incentivise performance through innovation grants and capacity-building initiatives. With empowered governance at the grassroots, regeneration efforts can be more agile, inclusive, and tailored to local needs.

(iii) Regionalised and Mandatory Sustainable Design Guidelines

Mandatory regional building codes should be developed to ensure that regeneration projects reflect local climate conditions, cultural heritage, and material efficiency. These guidelines should draw from traditional architecture and be co-created with architects, urban designers, and local communities. Once developed, they must be integrated into Development Control Regulations (DCRs) and municipal

byelaws. Incentives for compliance and penalties for non-conformance will ensure accountability. Such region-specific codes will promote environmentally responsive and culturally resonant design practices across Indian cities.

(iv) Monitoring, Evaluation, and Feedback Mechanisms

The establishment of a National Urban Regeneration Observatory (NURO) under the Ministry of Housing and Urban Affairs is crucial for evidence-based planning. This body should monitor environmental, social, and economic impacts of regeneration projects using standardised indicators—such as thermal comfort, land-use diversity, carbon reduction, and socio-economic upliftment. Data should be sourced through AI tools, citizen science, and remote sensing, and made publicly available through open-access platforms. Feedback loops must be built into project lifecycles to allow mid-course corrections and improved policy responsiveness.

(v) South-South Learning and Knowledge Diplomacy

India should institutionalise South-South cooperation in urban regeneration by forging partnerships with other emerging economies that face similar demographic and developmental challenges. These collaborations can take the form of bilateral urban knowledge platforms, academic partnerships, and international summits focused on co-developing context-specific solutions. Establishing Urban Regeneration Chairs in leading Indian planning schools can serve as a knowledge hub for such exchanges. Lessons from countries like Africa, Southeast Asia, and Latin America can provide low-cost, inclusive, and adaptive strategies to inform India's own urban transformation.

(vi) Community-Centric and Participatory Implementation

A truly sustainable urban regeneration process must place communities at its core. This requires mandating citizen consultation at every stage—from site selection and design to construction and post-occupancy evaluation. Social Impact Assessments should become a legal prerequisite for all major regeneration projects. Mechanisms such as public charrette, digital feedback platforms, and regular citizen assemblies should be institutionalised. Community-Based Organisations (CBOs) and Self-Help Groups (SHGs) must be involved not only in planning but also in managing and maintaining regenerated spaces, ensuring long-term social ownership and upkeep.

(vii) Innovative Finance and Risk Mitigation Strategies

Urban regeneration efforts in India often struggle with funding gaps, particularly low-income and informal areas. To overcome this, cities must explore innovative financing mechanisms like green municipal bonds, Land Value Capture (LVC), and public-private urban regeneration funds. Central and state governments can facilitate this by offering viability gap funding and partial guarantees that de-risk private investment. Establishing marketplaces for climate-linked

finance instruments and promoting blended finance approaches can attract both institutional and community investors, unlocking much-needed capital for sustainable regeneration.

(viii) Heritage and Cultural Integration as Regeneration Catalysts

Urban regeneration should not merely focus on infrastructure but must integrate cultural identity and historical continuity. Policies must promote the adaptive reuse of heritage structures and incorporate local art, public spaces, and traditional crafts into the built environment. Urban Heritage Conservation Units should be formed within state-level planning bodies to guide these efforts. Financial incentives such as tax benefits and redevelopment grants can support these initiatives. By positioning heritage conservation as an economic and tourism strategy, cities can foster regeneration that is not only sustainable but also rooted in local pride and identity.

(ix) Replicable Aspects of PPP Models in Urban Regeneration: Global South Insights

Beyond South Africa, several countries across the Global South have adopted innovative public-private partnership (PPP) models that offer specific, replicable aspects suitable for urban regeneration in India. These models are notable not only for attracting private investment but also for aligning regeneration outcomes with community needs, governance reforms and sustainability objectives.

In Brazil, the “Minha Casa Minha Vida” initiative bundled housing, sanitation, and transport infrastructure into unified PPP contracts, supported by federal funding and local implementation. This model demonstrates the value of integrated infrastructure planning and cross-subsidisation---an approach India could adopt in Smart Cities to merge housing and mobility planning.

Colombia’s Bogotá model exemplifies the use of PPPs in public land development, where land remains publicly owned but private developers build and manage urban infrastructure. This model safeguards against speculative displacement and ensures long-term affordability. Indian states experimenting with land pooling mechanisms such as Delhi, Gujarat, and Haryana can adapt this model to enhance transparency and social equity in land-based regeneration.

In the Philippines, PPPs for slum upgrading have been successfully executed through tripartite arrangements involving NGOs, government, and private developers. The Vitas Tenement project in Manila is a case in point, where civil society actors facilitated trust-building, resettlement planning, and long-term maintenance. India’s informal settlements particularly in cities like Mumbai and Kolkata could benefit from this collaborative model by formalising the role of SHGs, CBOs, and NGOs in the regeneration process.

Kenya’s Nairobi Urban Renewal Program introduced green-certified public buildings through DBFOT (Design-Build-Finance-Operate-Transfer) PPP models.

Private contractors finance and build green infrastructure for government use, with lease-back arrangements ensuring cost recovery. This mechanism is highly relevant to India's green building mandates under GRIHA or IGBC, particularly for schools, hospitals, and public housing.

Each of these models contributes a distinct and replicable element:

- South Africa: performance-linked subsidies and risk guarantees for affordable housing.
- Brazil: integration of housing and infrastructure in single PPP frameworks.
- Colombia: protection of public land and prevention of gentrification.
- Philippines: inclusion of civil society as an equal partner in regeneration.
- Kenya : DBFOT for green public infrastructure.

These practices support the paper's broader recommendations on innovative finance, community engagement, and institutional convergence. They also affirm that PPPs in the Global South are most effective when they are not just financially viable but also socially anchored and ecologically sound.

Conclusion

Sustainable architecture is not merely a construction practice; it is a transformative force that shapes inclusive, resilient, and context-sensitive urban regeneration. In India's rapidly urbanising environment, characterised by demographic pressures, ecological vulnerabilities, and spatial inequities, the built environment can no longer be approached as an isolated design concern. Rather, architecture must be integrated with planning, policy, and community-led processes to regenerate cities as equitable, sustainable, and vibrant spaces for all.

This research reveals the urgency of moving away from fragmented, top-down urban interventions and instead embracing holistic, multi-scalar regeneration strategies. Participatory governance, localised design intelligence, and decentralised planning are key components in such a transformation. India, with its rich architectural traditions, strong civil society networks, and a growing knowledge economy, is uniquely poised to take on a leadership role in the global South's urban regeneration movement.

Comparative insights from Brazil's integrated housing frameworks, Colombia's participatory spatial planning, and South Africa's PPP-based housing finance mechanisms affirm that innovation in urban regeneration is not limited to high-income nations. These peer economies demonstrate that sustainable urbanism can be both socially just and cost-effective when it is contextually rooted and institutionally supported. By investing in South-South collaborations, India can not only learn from but also contribute to a shared repository of regenerative urban practices.

India's demographic scale and infrastructural complexity make it a natural incubator for scalable solutions in regenerative urbanism. Its capacity to align policy innovation with architectural excellence offers an unprecedented opportunity to chart a distinctive pathway that other emerging economies can emulate. National missions like Smart Cities and AMRUT have laid foundational groundwork, but a deeper commitment is needed to embed architectural sustainability, cultural continuity, and community participation into the very DNA of urban development.

With institutional reforms that empower urban local bodies, financial instruments that de-risk inclusive investment, and educational reforms that mainstream regenerative principles in design curricula, India can emerge as a thought leader in sustainable urban transformation. This leadership must be rooted in practice, driven by innovation, and accountable to the people and ecologies it serves.

India's leadership potential is further reinforced by its commitment to international climate accords and the Sustainable Development Goals (SDGs). By aligning its urban regeneration strategies with these global commitments, India can position itself as a model for balancing growth with responsibility. Furthermore, India's vibrant ecosystem of academic institutions, research think tanks, urban design professionals, and non-governmental organisations provides a strong foundation for knowledge-based policy implementation and experimental innovation. Cities like Pune, Ahmedabad, and Bhubaneswar have already demonstrated the feasibility of community-based planning, heritage conservation, and green infrastructure integration within larger regeneration frameworks.

To sustain this momentum, it is essential to build coalitions across government tiers, civil society, and the private sector. Multi-stakeholder governance platforms and urban innovation labs should be institutionalised to design, test, and scale regenerative interventions. Additionally, India must invest in data-driven decision-making through the use of smart technologies, GIS mapping, AI-enabled predictive planning, and citizen science methodologies. These tools can enhance transparency, responsiveness, and contextual adaptability in urban development.

Ultimately, the success of India's regenerative urbanism will depend on its ability to view cities not just as economic engines but as shared habitats where equity, ecology, and empowerment converge. The future of India's cities lies in building systems that are not only efficient but also empathetic—cities that respond to climate emergencies, uphold human dignity, and reflect the cultural richness of their people. By embracing a future-ready, heritage-sensitive, and people-first approach to urban regeneration, India can shape a globally influential model that redefines urban development for the 21st century and beyond.

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Implementation Challenges in Redevelopment of Government Housing in Delhi

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Abstract

Master Plan implementation is fraught with varied challenges, particularly in translating policies into actionable projects. Although the literature on plan preparation is extensive, research on plan implementation especially in Indian context, remains limited. This study of master plan implementation process was examined through the redevelopment of government employees' housing in Delhi. It analyses implementation process by identifying the key challenges, gaps, and role of existing institutional frameworks in shaping redevelopment outcomes. The study identifies systemic issues such as absence of detailed local-level plans, inconsistent regulatory frameworks, lack of effective monitoring and evaluation mechanism, and lack of institutional coordination—contributing to delays and thereby suboptimal achievement of planning objectives. The missing links in implementation process of redevelopment projects contribute to delays and dilute the intended planning objectives.

Keywords

Implementation, Redevelopment, Delhi, Master Plan, Government Employees' Housing.

Introduction

Urban planning plays a pivotal role in shaping cities, yet its implementation often falls short, resulting in unorganised and inefficient urban growth (Pressman & Wildavsky, 1984). This is evident in India, where delays and inconsistencies in implementations have led to significant disparities between the strategic vision and the outcomes

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(Bhattacharya, Patro, & Rathi, 2016). These gaps hinder the progress towards achieving Sustainability Development Goals (SDGs) and undermining resilience and inclusivity. Reasons for outcome gaps include bureaucratic obstacles, inadequate funding, and poor stakeholder coordination (Smith, 2017).

India's Master Plan implementation issues stem from systemic governance issues—fragmented coordination, corruption, political instability, and limited financial resources (Ahluwalia, Kanbur, & Mohanty, 2014). These factors contribute to a lack of transparency and favouring vested interests, ultimately hindering urban planning objectives. For instance, Bangalore Metropolitan Region Revised Structure Plan 2011 highlights the need of enforcement, as uncontrolled urban sprawl and resource degradation illustrates that only about 30 per cent of the Development Plan is implemented (Jagtap & Singh, 2018). Similarly in Mumbai's 1991 Development Plan, only about 5-7 per cent of actual plan got implemented, leaving the city vulnerable to environmental and social challenges (Jagtap & Singh, 2018). In Delhi, ineffective implementation of Development Control Regulations (DCRs) led to unauthorised colonies and informal settlements, revealing a persistent gap between planning and implementation (Prabhakar, Agarwal, & Rangan, 2020).

This gap between planning and implementation hinders learning from post implementation and limits practitioners and policymakers from refining governance strategies, underscoring the need to examine challenges in plan implementation process. This study analyses spatial plan implementation, focusing on processes, and challenges at each stage, with focus on publicly- owned and funded government employees' housing projects. Using official documents, interviews, and secondary resources, it maps the implementation process in Delhi, critically examining the redevelopment of government employees' housing at Sarojini Nagar.

LITERATURE REVIEW

Understanding the Implementation of Spatial Plans

Implementation is the process of transforming statutory plans into actionable outcomes, bridging the gap between policy-making and land development (Stead & Nadin, 2008). This transformation unfolds through regulatory mechanisms such as building permits, zoning laws, and land use policies (Mazmanian & Sabatier, 1989).

Despite its significance, implementation remains a neglected aspect of urban planning, with minimal academic and professional focus (Smith, 2017). While attention is given to policy-making, zoning regulations, and urban design, the implementation process remains under-researched (Laurian, Lucie, 2004). Scholars have attempted to bridge policy implementation theory and planning practice (Talen, 1996), yet a comprehensive framework linking plans to real-world impacts is lacking. Most of the research emphasises conformity between planned and actual outcomes, but nuanced analyses of the stages between plan creation and operationalisation is needed

(Laurian, Lucie, 2010). Traditional models emphasise plan creation while inadequately addressing its execution, creating a disconnect between planning decisions and practical application, leaving many plans poorly executed or unimplemented.

Lyles et al., (2015) outline implementation as a six-stage process: plan development and adoption, implementation initiation, ongoing implementation action, planning outcomes, impacts and monitoring and evaluation. The process begins with legislative approval and concludes with local jurisdictions beginning implementation and possibly initiating monitoring and evaluation. Implementation initiation translates policy into action. Ongoing implementation enforces regulations, delivers services, and constructs projects. The planning outcome stage evaluates built-environment changes, determining whether goals resulted in community impacts. Finally, monitoring and evaluation track progress and outcomes, allowing adjustments based on performance and outcomes (Lyles, Berke, & Smith, 2015).

Provisions for Redevelopment in the Master Plans of Delhi

Delhi is the first example of comprehensive planning in India. The Delhi Master Plan is a long-term document aimed at addressing spatial, infrastructural, and socio-economic challenges. The Delhi Master Plan (DMP) 1962 envisaged development of 44,770 hectares to accommodate 4.6 million people by 1981. As part of urban renewal strategy, the plan emphasised redevelopment, in Old Delhi (Shahjahanabad) refer Figure 1, focusing on conservation, improvement and phased redevelopment instead of large-scale demolition (Dutta & Bandyopadhyay, 2011). The city was divided into 24 land-use zones, and low-rise government employees colonies were developed by the public agencies to meet urgent post-independence housing needs. Colonies like Sarojini Nagar, Kidwai Nagar, Netaji Nagar, Naroji Nagar were developed by Central Public Works Department and Delhi Development Authority (DDA).

Implementation faltered due to weak institutional response, absence of coordinated metro-regional planning, time-bound programmes, monitoring and feedback mechanisms which limited the impact of renewal (Datta, 1983). In 1973, Town and Country Planning Organisation reviewed the plan but no action was initiated (Jha, 1983). Urban renewal projects were constrained by the complexity of old city fabric, lack of detailed regulations, insufficient funding, and administrative inertia. Without periodic reviews or responsive governance, redevelopment remained largely ineffective.

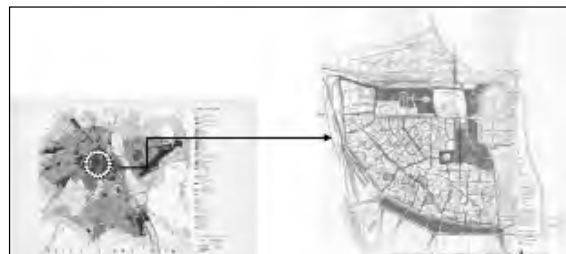


Figure 1: Core Areas for Redevelopment, MPD-1962.

Source: <https://dda.gov.in/master-plan-1962>.

The first revision, Master Plan for Delhi Perspective 2001 (MPD-2001) notified in 1990, aimed to accommodate 12.8 million people by 2001, continuing earlier proposal for urban renewal while expanding the scope of redevelopment. Post-independence, planning strategy underwent a major shift, incorporating both government housing in Lutyens' zone and non-conforming industrial and commercial areas. The plan provided guidelines for urban renewal areas, targeting redevelopment of 1000 residential *katras* annually, benefiting 20,000 families, and renewal of 528 hectare of special areas (DDA, 1990).

Zonal Development Plan of Zone-D emphasised redensification of government housing areas through comprehensive redevelopment schemes (Zonal Plan Zone D, Section Seven). MPD-2001 designated central areas like the Walled City, Karol Bagh, and adjoining areas as 'special areas' due to their mixed-use character and heritage significance, categorising as urban renewal areas (Figure 2), and aimed to reduce density from 537 to 350 persons per hectare (ppha) by 2001 (DDA, 1990).



Figure 2: Special Areas, Master Plan of Delhi Perspective–2001.

Source: <https://dda.gov.in/master-plan-2001>.

Urban renewal scheme emphasised 'conservative surgery'—upgrading infrastructure without large-scale demolition, supported by surveys, relocation of hazardous industries, regularisation of safe and compatible use zones after environmental upgrades, and prescribing urban design scheme for large-scale redevelopment (projects over 1 ha or buildings over four-storey). Redevelopment followed the Development Code and land-use framework spanning 37 zones in ten categories: residential, commercial, manufacturing, recreational, transportation, utility, government, public and semi-public and agriculture and water body and mixed-use zones.

Institutional mechanisms were introduced to strengthen implementation, with high-level policy making committee to review and approve layouts, redevelopment proposals and urban renewal schemes, supported by local bodies responsible for layout and building plans approvals. Separate regulations were framed for special areas,

and a monitoring unit was proposed to track physical development, conservation, and upgrading. According to Director (Planning) DDA, implementation remains challenging due to environmental uncertainties and unclear agency roles (Uttarwar, 2012). Proposals for special areas were unimplemented due to financial constraints, while the presence of informal settlements, non-conforming uses, and traditional planning contexts made it difficult to apply rigid spatial standards of Master Plans. A critical obstacle was the lack of monitoring and review mechanism that could provide feedback.

The Ministry of Urban Development's Crash Housing Programme (DDA) proposed redevelopment of the Diplomatic and Institutional Zone (DIZ), Minto Road, Dev Nagar, Aliganj, and Rouse Avenue (DDU Marg). However, only the DIZ area and Minto Road projects were redeveloped, while the rest remained at proposal stage (Dey, 2003). Due to insufficient funds, the government opted for low-income housing with reduced area norms and specifications. Redevelopment undertaken by CPWD in 2000s marked the first government-led initiative to modernise employees' housing, reflecting Master Plan's expanding redevelopment scope and its attempt to detail provisions and develop monitoring mechanisms.

In the context of economic liberalisation (early 90's) and globalisation (early 2000s), the second revision, Master Plan for Delhi-2021 (MPD-2021), aimed to transform Delhi into a global metropolis accommodating 23 million people across 15 planning divisions, with redevelopment as a key strategy (DDA, 2007). Redevelopment strategy aimed to enhance infrastructure and create more open spaces by densification of existing urban areas (Figure 3). It focused on: (i) re-densifying low-density housing areas, particularly along selected Metro corridor, (ii) identifying priority redevelopment areas, and (iii) formulating Special Redevelopment Schemes. The plan assessed that around 40 per cent of housing needs could be met through upgrading existing areas, including redeveloping MRTS influence zones, higher Floor Area Ratio (FAR) (Up to 400) and private sector participation (DDA, 2007). However, implementation of redevelopment interventions were limited.

Redevelopment included areas such as Walled City and its extensions, where conservative surgery was preferred over demolition. Industrial area redevelopment emphasised modernising existing industries through Public-Private-Partnership (PPP) framework, and redeveloping organically industrialised (undesignated) areas with enhanced FAR (1.5 times permissible FAR). An additional FAR of upto 10 per cent for commercial and community use was permitted, contingent upon Integrated Redevelopment Scheme. Urban design requirements included MRTS corridor scheme with minimum 4 hectare. planning area and 3,000 sqm plot. Incentives such as enhanced FAR, Transferable Development Rights or Accommodation Reservation were introduced to encourage redevelopment. MPD-2021 details development control measures for diverse context, assigning various agencies (DDA, Municipal Corporation

of Delhi (MCD), New Delhi Municipal Council (NDMC), National Capital Region Transport Corporation (NCRTC) and Public Sector Undertakings to identify, prepare and execute redevelopment schemes.

The plan mandates a monitoring framework involving formation of monitoring and technical committee, a dedicated monitoring unit, and management action group to track progress and challenges. Reviews were mandated every five years, with cross-subsidisation (residential-commercial) proposed as a self-financing model.



Figure 3: Master Plan of Delhi-2021.

Source: <https://dda.gov.in/sites/default/files/landuse-map-2021.jpg>.

However, implementation was challenged by systemic issues, inter-agency coordination failures and inaccurate/ incomplete data. The plan lacked detailed development phasing and financial strategies, raising concerns about its practicality and viability. Redevelopment of government employees housing projects experienced delays as developers lacked prior encroachment details (Chitlangia, 2024). At local level, failure to incorporate crucial details like FAR and ground coverage led to underutilisation of development potential. Lack of participatory planning and inadequate monitoring further weakened alignment between plan objectives and urban needs.

Redvelopment in Delhi has undergone various shifts, from state-led public housing schemes in the 1960s to more inclusive and participatory redevelopment in recent decades (Batra, 2009 & DDA, 2007). Government employees' housing was a direct state responsibility, e.g. low-rise colonies like Sarojini Nagar, Netaji Nagar, Kidwai Nagar, developed by public agencies like Central Public Works Department (CPWD) and National Buildings Construction Corporation (NBCC). Over time, this approach shifted toward more efficient land use and densification, promoting high-rise, mixed-use redevelopment of old colonies through the PPP model. The modernisation of housing stock proposed in Master Plans has only partially fulfilled stated objectives. The continued proliferation of slums and unauthorised colonies highlights the failure of redevelopment strategies to adequately address affordable housing needs at the time of implementation (Dupont, 2007). The city has undergone significant infrastructure development, persistent shortcomings in water supply, infrastructure, and pollution control, continue to negatively impact urban living conditions. (World Bank, 2013). These issues stem from systemic deficiencies in implementation and translation of planning objectives into tangible urban outcomes (Shaw, 1999).

Comparison of Redevelopment Policies in Delhi's Three Master Plans

Delhi's urban planning framework for old areas has evolved through three revisions of the Master Plan, refining policies and strategies for redevelopment and renewal as shown in Table 1. This evolution has not followed a linear trajectory, often departing from earlier frameworks in response to emerging challenges. The first DMP-1962 introduced 'Urban Renewal', focusing on redeveloping, conserving, and improving Walled City (Shahjahanabad). While it recognised the need for revitalisation, the lack of detailed regulatory mechanisms led to inconsistent implementation. The second revision, redefined redevelopment as 'Special Area' strategy, aiming to transform Walled City into a residential zone, and expanding its scope to industrial areas and government employees' housing projects. Third revision adopted a detailed approach, comprehensively identifying redevelopment zones and introducing specific regulatory frameworks to guide urban renewal efforts in old areas. It emphasised structured redevelopment, mixed-use zoning, and modernised infrastructure for systematic transformation of aging urban spaces. Delhi's urban planning approach has shifted from a broad urban renewal effort to a more focused, strategic, and regulatory framework for sustainable transformation. However, lack of clear implementation guidelines, has created a gap between policy intent and execution. The absence of focus on brownfield regeneration and inner-city revitalisation or redevelopment has resulted in neglected areas experiencing accelerated urban decay.

Table 1: Comparison of Redevelopment Policies Across Three Master Plans

Context	DMP - 1962	MPD - 2001	MPD - 2021	Remarks
Expansion of Scope	Old Delhi (Shahjahanabad)	Urban renewal areas - Walled City, Karol Bagh. Other urban renewal areas such as unplanned industrial areas.	Planned areas: influence zone along MRTS and major transport corridor; underutilised / low-density areas. Special areas; shopping / commercial centres industrial areas / clusters and resettlement colonies. Unplanned areas: villages; unauthorised colonies and JJ clusters.	The scope of redevelopment expanded. Including more land uses and broader range of areas.
Requirement of Integrated Schemes	Provisions of integrated schemes but redevelopment was fragmented and zoning based.	Comprehensive urban renewal schemes to be prepared for redeveloped areas, emphasising heritage conservation for special areas. Schemes to integrate infrastructure and heritage conservation.	Comprehensive redevelopment schemes for planned and unplanned areas, emphasising mixed-use and sustainable redevelopment. Conservation of special areas (Walled City and Karol Bagh).	Planning evolved from isolated efforts to integrated and structured urban renewal strategies and comprehensive redevelopment scheme for all planned and unplanned areas.
Monitoring Targets	Basic monitoring of zoning laws and building regulations.	Strong monitoring mechanism with periodic review every five years.	Special committee for monitoring.	Monitoring remained a key aspect across all plans, ensuring implementation and regulatory compliance.

Context	DMP - 1962	MPD - 2001	MPD - 2021	Remarks
Regulations and Detailing	Separate building regulations for walled city. Basic zoning laws introduced.	Special area regulations for heritage zones like walled city, unauthorised colonies and slum redevelopment.	Detailed redevelopment regulations, including Transit Oriented Development (TOD) guidelines, vertical growth policies, and sustainability-linked building norms. Prioritises TOD and influence zones along mass transit corridors for high-density redevelopment, redevelopment incentives.	Increased detailing reflects Delhi's shift towards modern urban planning, mixed-use zoning, and eco-friendly development. Regulations - detailed and specific, incorporating modern urban planning principles.
Implementation Provisions	Phased zoning regulations, strict land-use controls, and building byelaws. No clear enforcement mechanisms.	Phased zoning regulations, strict land-use controls, and building byelaws. No clear enforcement mechanisms..	Phased zoning regulations, strict land-use controls, and building byelaws. No clear enforcement mechanisms.	Phased zoning regulations, strict land-use controls, and building byelaws. No clear enforcement mechanisms.

Source: Compiled by the authors.

Implementation Process of MPD-2021

Implementation of the Master Plan is a complex, multi-phase process aimed at guiding city development and addressing urban challenges. As seen in Figure 4, urban development, redevelopment, and land-use management focus on stages, agencies, and key components involved in execution of the MPD-2021. The process of implementing city plans is derived from six stages identified in literature review: plan development and adoption, implementation initiation, ongoing implementation action, planning outcomes and monitoring and evaluation. Each stage is explained for implementing MPD-2021:

Plan development and adoption stage, as stipulated in Sections 7 and 8, chapter 3 of the DDA Act-1957, is the statutory responsibility of DDA to formulate, implement, and

periodically revise the Master Plan, guiding land use, infrastructure, and urban growth. The development and adoption of MPD-2021 culminated in its formal approval by Ministry of Housing and Urban Affairs (MoHUA) in 2007 (Gazette Notification, 2007). Following adoption, Section 8 of DDA Act-1954, empowers DDA to prepare Zonal Development Plans (ZDP) for each zone in conformance with MPD, to be approved by MoHUA.

Implementation initiation translates policy into actions, either automatically at plan adoption or evolving thereafter. Under Chapter IV of the DDA Act of 1957, development areas are identified, and local bodies in Delhi are empowered for development. Preparation of development or layout plans for implementing programmes and projects, encompasses special zones, planned and unplanned areas, special areas and urban villages, in brownfield location – rest lies with the concerned local body in Delhi (MCD, NDMC, DDA) as per the DDA Act, including redevelopment schemes. This stage conforms to the Master Plan regulations.

Ongoing implementation includes steps by individuals and organisations to carry out Master Plan policies. This includes regulations enforcement, programme services delivery, projects engineering and construction, and coordination across planning domains. According to Section 13 of Chapter IV of DDA Act application for permission to the Delhi's local body or Authority must conform to zoning and building regulations. Sub-section '3'(ii) of Section 13 of the DDA Act-1957, authorises local bodies to grant development permission in accordance with regulations, which conform to Master Plan policies approved during initiation stage. This stage encompasses regulatory enforcement and project management activities.

Planning outcomes are changes to the spatial patterns resulting from implementing plan policies, which vary significantly depending on the planning domain. This phase, along with impacts and monitoring and evaluation, highlights performance—whether goals and objectives are resulting in tangible community changes as evidence of plan performance. The DDA Act-1957, Chapter IV, Section 14 prohibits land and building uses contrary to approved plans. Once the plan comes into operation in a zone, no land or building be used except in conformity with it. Under Unified Building Byelaws (UBBL) 2016, submission of completion drawings is required for a certificate confirming compliance before a building becomes operational. MPD-2021, this phase emphasises on executing redevelopment schemes for planned or unplanned areas, special areas, village areas. Outcomes are shaped by Master Plan policies and verified for compliance. Redevelopment of Government employees' housing is evaluated for comprehensive development as per the Master Plan objectives. MPD-2021 also mandates review (after every 5 years) to assess effectiveness, allowing for mid-term adjustments in accordance to socio-economic conditions and unforeseen challenges.

Initially, plan influence is evident when plans are referenced in decision-making, and conformance is achieved when adopted policies, programmes, and projects align

with the plan. As implementation progresses, conformance is reflected in post-adoption actions. If local conditions change, plan goals may still guide outcomes despite deviation from policies. Plan performance becomes apparent in outcome phases, while conformance may become less significant. Plans positively affect outcomes, and desired outcomes can be achieved when deviations from land-use policies occur due to local changes. In such cases, the plan achieves its goal, even if implementation actions do not strictly adhere to outlined policies. Plan influence can persist throughout the outcomes, impacts, and monitoring phases, as long as decision-makers utilise and update the plan.

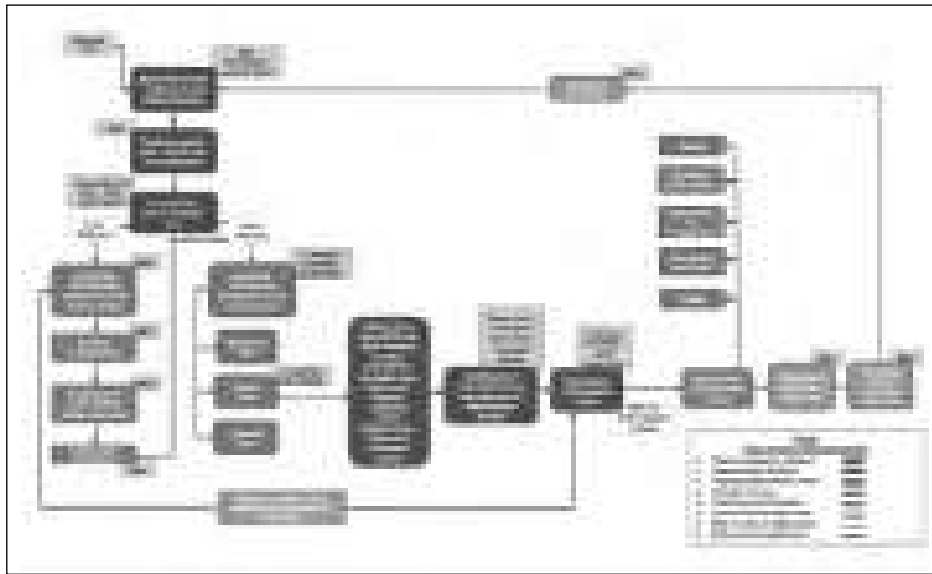


Figure 4: Implementation Process, MPD-2021.

Source: Author's interpretation (MPD-2021), Experts views.

Implementation Process of Redeveloping Government Employees' Housing in Delhi

Delhi has 207 Government employees' housing colonies (DUAC, 2019), primarily located in the central parts, Zones D and F, as shown in Figure 5. Zone D (6,855 ha) encompasses Lutyens' Delhi, and adjoining areas (DDA, 2017). The employees' housing in inner Delhi, constructed during post-independence period, is characterised as low-rise two-storey development (Figure 6). MPD-2021 proposed redevelopment with higher densities of 200 dwellings per unit/hectare and an enhanced FAR of 400.

The MPD-2021 serves as a comprehensive framework for urban development. The practical implementation is examined by analysing how theoretical concepts and strategies are translated into concrete actions and projects. Focusing on government

employees' housing, particularly Sarojini Nagar, this study presents a detailed case analysis of the plan's execution. This will provide an example of plan implementation, and a broader understanding of how large-scale urban projects are operationalised in the real-world contexts.

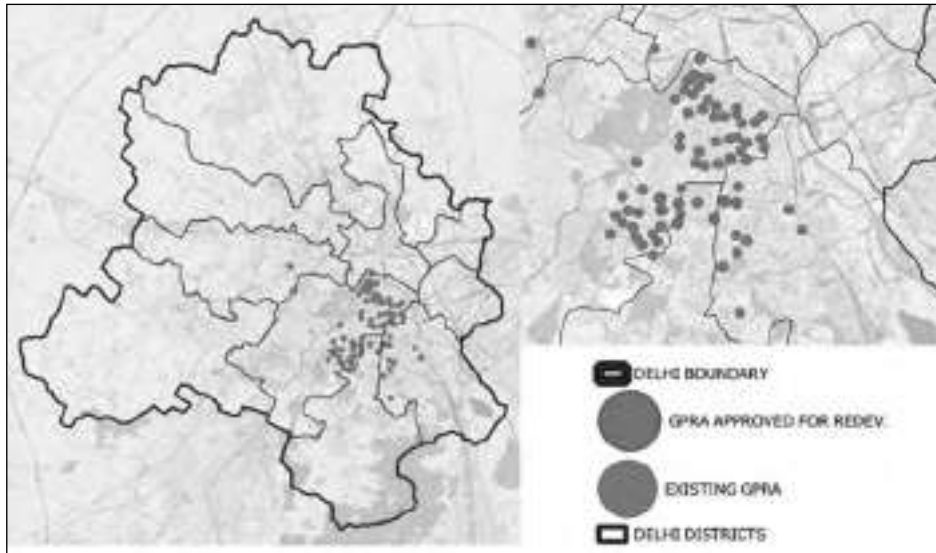


Figure 5: Government employees' Housing Colonies in Delhi.

Source: (DUAC, 2019).



Figure 6: Government Employee Housing Before Redevelopment.

Vision to Statute : Planning, Framing and Early Execution of MPD-2021

Analysis of development control regulations for government employees' housing redevelopment, (Table 2 and 3) shows a substantial population increase in Zone D from 58,118 to 1,11,751, due to the increased Dwelling Units (DU's). In Sarojini Nagar's dwelling units rose from 4687 to 10,905, a 114 per cent density increase. Densities remained within MPD-2021 limits (200 DU/Ha), but full redevelopment potential was not achieved due to site-specific constraints.

Redevelopment of 261.6 Ha in Zone D accommodates 235,440 people, below the permissible capacity of 288,243 people indicated in Table 2, highlighting a misalignment between Master Plan's development controls and the ZDP for Zone D. MPD-2021 envisions 9.2 lakh people (4 per cent of Delhi's projected population) in government employees' housing (DDA, 2007). The Directorate of States (DoE) indicates only 70,578 DUs available, housing maximum 317,601 people (4.5 person per DU). Redeveloping of six colonies in Zone D, added approximately 11,500 DUs, raising capacity to 4,29,352 people. However, shortfall of about 1,10,000 dwelling units remains, exposing the gap between targets and actual delivery.

Amendments to MPD-2021 in 2013 (Added vide S.O. 1277(E) dated 19-05-2009 and modified S.O. 1215(E) dated 13-05-2013) exempted government housing from mandatory EWS/affordable housing quotas, despite slum encroachment on government land and a growing migratory population. According to Government of National Capital Territory of Delhi's (GNCTD's) 2001 demographic profile, migration exceeds natural population growth at 1:1.24, highlighting the need for structured urban expansion and redevelopment policies. Despite increased dwelling units/Ha and population capacity, projects remain below FAR thresholds due to site restriction such as ASI height caps and Safdarjung Airport operational limits. Lack of local-level planning further excluded area-specific details, affecting infrastructure integration and sustainability.

Redevelopment colonies as gated communities undermine MPD-2021's sustainability vision, promoting social and spatial segregation, increasing private vehicle dependence, and disrupting last-mile connectivity, contradicting the Transit-Oriented Development policy. These redeveloped areas remain isolated from their surrounding urban context. Figure 7 outlines demand and supply metrics: the total requirement was 80,226 dwelling units, only 68,897 dwelling units were available. Largest deficit lies in Type III quarters (3,007 units). Post-redevelopment, surplus stock is projected to be 89,096 dwelling units but type-specific shortages persist, indicating supply demand misalignment.

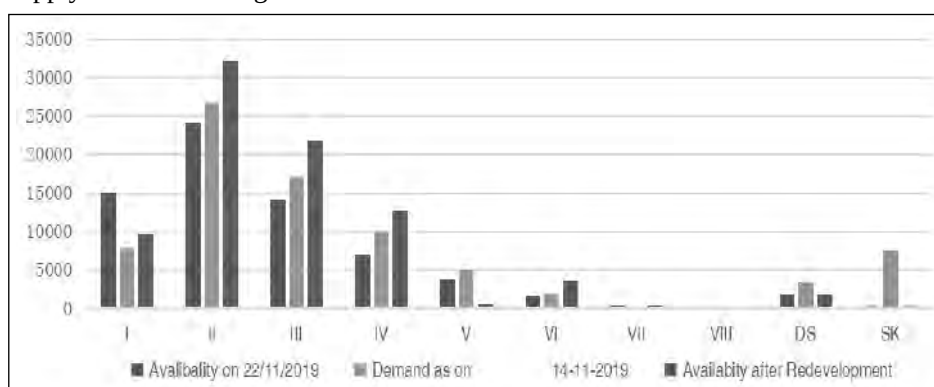


Figure 7: Housing Demand, Shortage, Surplus and Redevelopment Impact.

Source: (DUAC, 2019), (DDA, 2007), (DDA, 2017).

Despite the Master Plan's emphasis on integrated redevelopment, execution has been fragmented. Sanction drawings are submitted for individual plots as gated communities and sanctioned under plot-based building regulations, rather than as comprehensive redevelopment scheme envisaged in MPD-2021. Redevelopment projects were planned as high-density residential developments, the absence of local-level planning has led to traffic congestion, water supply shortage, and environmental concerns. Planning remains tied to Zonal Development Plan (ZDP) and local bodies permit aligned with MPD-2021 policies, bypassing detailed sector or neighborhood-level planning needed to address infrastructure and sustainable development. The DDA Act 1957 mandates detailed ZDPs, yet most of them remain inadequately developed.

Permit issuance in Delhi involves over 15 agencies leading to severe coordination issues, as approvals are required from central, state, and local levels agencies. Poor inter-agency coordination and incomplete proposals delay approvals, escalate costs, and stall construction. Institutional fragmentation, conflicting mandates, and weak integration have been cited as root causes (Jain, 2022).

Project delays are also linked to on-ground constraints: outdated underground services, encroachments, resistance to vacate quarters, inadequate Design of Experiment (DoE) data, illegal constructions, incomplete ownership records. For instance, NBCC reported three year delays at East Kidwai Nagar due to missing underground services data, inability to demolish service lines, incomplete ownership details, and employee resistance to vacate quarters. Sarojini Nagar, redevelopment faced legal roadblocks when tree-felling permissions were granted without proper design review, prompting court-ordered halts and redesigns to preserve trees (Mehta v. Union of India, 2018). These legal and administrative hurdles highlight the importance of skilled manpower and efficient regulatory clearances.

The lack of structured monitoring and evaluation further undermines project goals. Delhi lacks systematic reviews of redevelopment outcomes, leaving infrastructure, urban densities, and environmental impacts unchecked. Thereby resulting Master Plan amendments and project modifications being reactive based on immediate site conditions rather than being long-term planning interventions.

Redevelopment projects such as Sarojini Nagar, East Kidwai Nagar, Netaji Nagar and Srinivasपुरi have faced delays of upto 36 months, construction at Srinivasपुरi has not started, while it is going on in Sarojini Nagar and Netaji Nagar. In contrast, Thyagraj Nagar and Mohammadpur faced minimal delays. Despite these efforts, redevelopment in Delhi remains a sluggish and fragmented process, characterised by lengthy approvals, bureaucratic delays, and inadequate post-construction monitoring.

The following section analyses the implementation of government employees' housing at Sarojini Nagar, highlighting challenges, planning shortfalls, and policy implications affecting its progress.

Table 2: Existing, Proposed and Permissible Population and Densities of DUs in Government employees' Housing

S. No.	Name of Housing b	Area of Zone D	Site Area (in Ha)	Existing			Proposed			In-creased Densities	Per-centage Increase	Permissible			Popula-tion of Zone D as per density 900 ppHa
				DUs	Popu-lation (approx. 4.5 fami-ly size)	Den-sity (DU's/ Ha)	DUs	Popula-tion	Den-sity (DU's/ Ha)			Den-sity (DU's/ Ha)	No of DU	Population (approx. 4.5 family size) & 900PPha	
1	New Moti Bagh		110				492	2214	4				22000	99000	235440
2	Thyagraj Nagar		5.38	602	2709	112	740	3330	138	621	23		1076	4842	
3	Kasturba Nagar		21.4	2521	11345	118	3585	16133	168	4788	42		4274	19233	
5	East Kidwai Nagar		34.8	2333	10499	67	4840	23735	132	13237	117		6960	31320	
6	Netaji Nagar		44.2	2772	12474	63	4727	21272	107	8798	71		8848	39816	
7	Sarojini Nagar	261.60 Ha (32.38%)	104	4687	21092	45	10015	45068	96	23976	114		20896	94032	
8	Mata Sundari Area		NA	NA	NA	NA							NA	NA	
9	Aliganj						NA	NA	NA	NA	NA				
9	Lodhi Colony		86.4	4586	20637	53							17270	77715	
10	Laxmi Bai Nagar		34.2	1980	8910	58						200	6840	30780	
	TOTAL			12915	58118		24399	111751					64054	288243	235440

Source: DUAC, 2019.

Table 3: Existing, Proposed - Permissible Ground Coverage, FAR and Height of Government Employee Housing.

S. No.	Name of Housing	Site Area (in Ha)	Existing			Proposed		
			Ground Coverage	FAR	Height (in Mtr.)	Ground Coverage	FAR	Height
1	Mohammadpur	3.68	35%	41.71	9	20.30%	137.88	45
2	Thyagraj Nagar	5.38	27%	52.10	9	14.25%	107.56	32
3	Kasturba Nagar	21.37	55%	55.20	9	14.20%	193.30	44
4	Naroji Nagar	24.96	67%	31.10	9			
5	Srinivasपुरi	29.59	55%	25.26	9	22.86%	199.92	89
6	East Kidwai Nagar	34.8	70.00%		9	27.00%	206.60	
7	Netaji Nagar	44.24	61%	33.96	9	24.30%	120.80	37
8	Sarojini Nagar	104.48	64%	31.10	9	19.11%	172.53	42

Source: DUAC, 2019.

Blueprint to Built Form : Ongoing Actions and Outcomes of MPD-2021

Sarojini Nagar is a government employee housing colony in Zone D, with various public amenities, including educational institutions, shopping centres, a central market, a post office, and a police station (Raje, 2020). The urban fabric follows an orthogonal grid pattern, with clusters arranged in quadrangles (Figure 7). This layout creates well-defined open spaces with mature trees, enhancing ecological value of neighbourhood. The centrally located Sarojini Nagar market located centrally, adding complexity to the project (Raje, 2020). Redevelopment is designed as mixed-use project with commercial space and residential spaces (Raje, 2020).

A Memorandum of Understanding was signed between MoHUA and NBCC for redeveloping Nauroji Nagar, Sarojini Nagar and Netaji Nagar colonies, with NBCC as the executing agency (Chatterjee, 2024). The project comprises 231 towers, 10,905 dwelling units office blocks and social infrastructure (MoEF & CC, 2018). NBCC is set to deliver 700 Type II quarters (2BHK) and a market hub near the street market. The Downtown hub will feature around 600 shops, including office and retail spaces in a high-street mall. Construction began in 2022 and is expected to finish by 2026 (Sinha, 2024). Despite this, the project remains one of NBCC's most delayed initiatives.

The Sarojini Nagar is redeveloped as a gated community, isolated from its surrounding context, following a piecemeal approach. As seen in Figure 9, redeveloped colonies along the Ring Road have more than double FAR, straining infrastructure and services without corresponding upgrades (Raje, 2020). Lack of local-level planning means gross densities are not calculated, increasing Zone D's holding capacity without assessing area-level thresholds, highlight planning gaps.

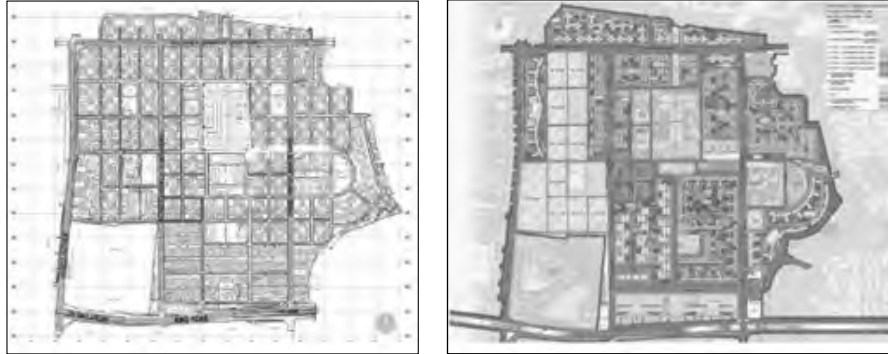


Figure 8: Layout Plan Before and Proposed Redevelopment of Sarojini Nagar.

Source: DUAC, 2019.

The original redevelopment plan lacked precise information on encroachments, number of trees, existing quarters (such as Bhakra Beas Management Board and RBI flats), land ownership, and unauthorised constructions, resulting in an incoherent proposal. Even after two years of review by multiple ministries and institutions, the proposal remained disjointed and lacked a holistic approach.

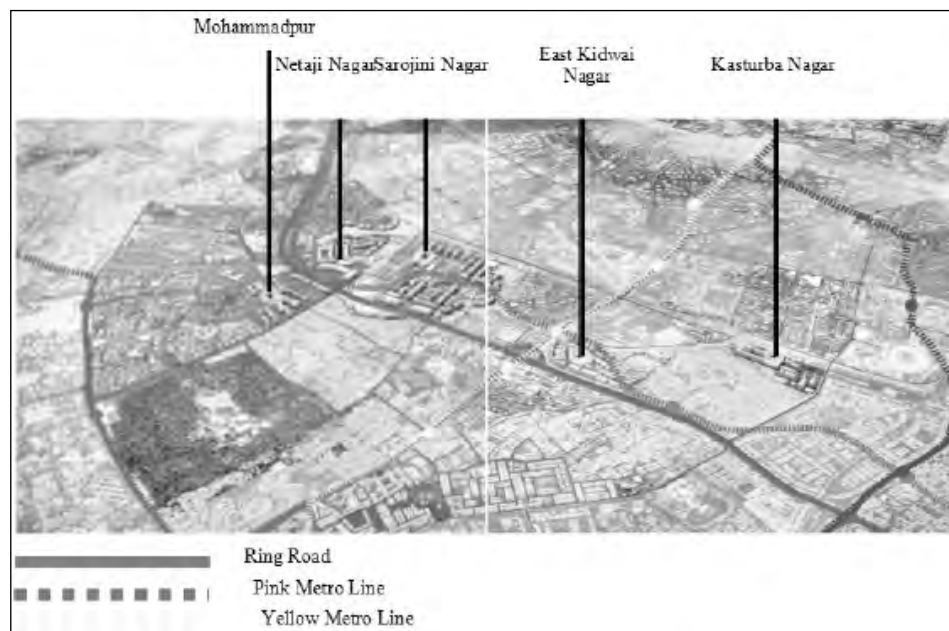


Figure 9: Redeveloped Government Employees' Housing in Zone-D.

A critical flaw was the absence of public involvement, which later prompted opposition and legal challenges. Although the project intended to align with Master Plan policies, NDMC assessed it as a standalone group housing project rather than an integrated redevelopment scheme. This piecemeal approach in Delhi redevelopment

projects, prevents adequate assessment of infrastructure needs, public services, road networks, and utilities. Consequently, fragmented development results in infrastructure gaps, inefficient service distribution, and unplanned urban growth.

On-ground, execution has revealed further complications. The lack of accurate underground service maps delayed construction as utilities required relocation. Legal challenges and public resistance intensified when informal workers and affected groups filed Public Interest Litigations (PILs) demanding rehabilitation and compensation. Vacating occupied land also delayed progress, increased costs and extended timelines (Figure 10). Environmental concerns further escalated in June 2018, when PIL challenged the felling of 16,500 trees for redevelopment across South Delhi. The Delhi High Court imposed a stay on tree-cutting, citing the city's deteriorating air quality. This case, referred to as "Delhi's Chipko Movement," underscored environmental consequences of redevelopment. Ongoing design revisions, litigations, and lack of inter-agency coordination slowed project progress.

The absence of a structured monitoring and evaluation mechanism further hampers effective implementation. No systematic process exists to assess whether higher density (due to higher FAR) is supported by corresponding infrastructure upgrades. No dedicated agency monitors compliance with Master Plan objectives or evaluate impacts on traffic, water supply, air quality, and green cover. This makes it difficult to correct course or adjust policies based on real-time data.

The current government redevelopment model emphasises densification and increased FAR but fails to adequately integrate green infrastructure, address infrastructure mismatches, neglect social and environmental resilience. Without comprehensive infrastructure upgrade, the project risks exacerbating congestion, water shortages, and strain on public services. Additionally, the lack of last-mile connectivity compromises the sustainability of the redevelopment.

Findings

The redevelopment of government employees' housing at Sarojini Nagar faces multiple implementation challenges, categorised as physical, technical, operational, political and environmental barriers (Figure 11).

In the initial phase, restrictions from adjacent sites, and fragmented land ownership, complicated redevelopment efforts. Inter-agency disconnection, poor coordination, and inaccurate land data delayed approvals, while legal disputes and reliance on political directives further obstruct progress. A major shortcoming is absence of a clear, cohesive vision and proactive planning, combined with rigid and outdated regulations.

During project initiation, bureaucratic inefficiencies and weak stakeholders' coordination prolonged approvals. The planning process remained fragmented, with poor resource management and limited quality redevelopment proposals.

During implementation, earlier challenges persisted. Site constraints, complex ownership, and administrative inertia also stalled progress. Insufficient data systems, inconsistent coordination, and regulatory loopholes reduced momentum. Environmental concerns also contributed to delays, while lack of competitive bids hindered efficiency.

These challenges undermine planning outcomes, leading to piecemeal redevelopment that distorts spatial structure. The lack of comprehensive strategy results in encroachments and poor integration with Master Plan objectives. Persistent legal disputes, unresolved land issues, and poor inter-agency mechanisms further restrict urban transformation.

As Figure 11 indicates, poor inter-agency coordination and complex approval processes are the most persistent barriers, hindering all stages. The Planning Outcome stage emerges as the critical bottleneck, significantly impacting overall execution of government housing redevelopment projects.

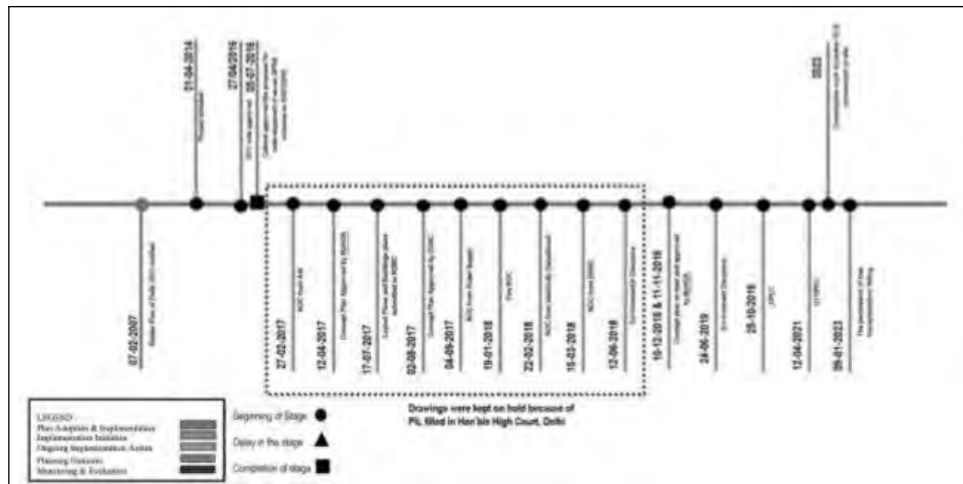


Figure 10: Timeline for Redevelopment of Government Employees Housing at Sarojini Nagar.

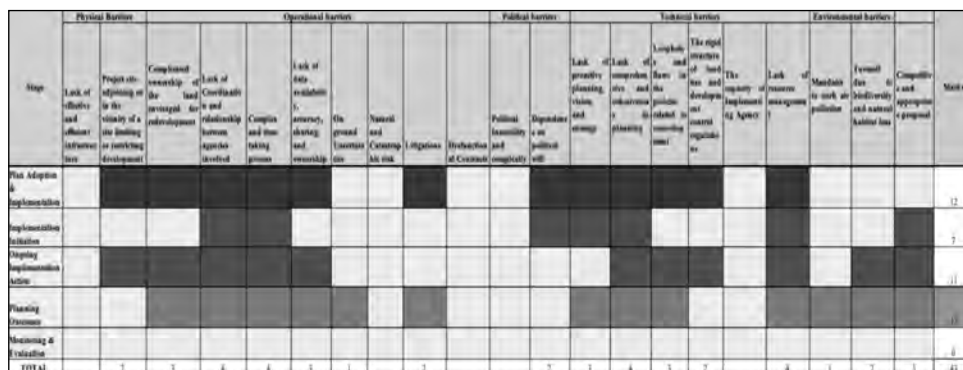


Figure 11: Stage-wise Barriers to Redevelopment of Government Employees Housing at Sarojini Nagar.

Conclusion and Way Forward

In the Indian context, plan implementation currently focuses on project designing and execution, i.e. ongoing implementation action. Delays remain one of the most discussed aspects of non-implementation, with challenges in decision-making, execution and approvals at project level. This paper broadens the concept of implementation by identifying missing links in the process, with emphasis on other stages of implementation. These include integrating projects into the larger scheme and linking planning permission to outcomes through effective monitoring and evaluation.

The objective of redevelopment in Delhi Master Plan was to accommodate population growth and provide housing for low-income households. While the plan aimed to accommodate 4 per cent population in government employees' redevelopment schemes, current projects have achieved 46.6 per cent of the target. Population thresholds in terms of gross densities were not considered during project approvals. In low-income housing provisions (mandating 45-55 per cent of small DUs), project delivered 36.0 per cent of Type II category housing, the lowest government housing category considering low-income. However, this remains significantly below the required share for Economically Weaker Sections (EWS) and Low-income group housing. Mandatory EWS provisions have been exempted for government redevelopment projects, undermining this planning outcome. This has led to limited availability of low-income formal housing provisions in central Delhi, in contrast to the Master Plan's envisaged community structure. In the absence of robust monitoring and evaluation framework that extends beyond projects to plan objectives and outcomes, the success of redevelopment projects remains illusory. This paper highlights the need to broaden the narrow definition of plan implementation process in current Indian discourse.

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Revitalising Urban Green Spaces: Insights from West Bengal's Atal Mission for Rejuvenation and Urban Transformation

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Abstract

This study examines the development of Urban Green Spaces (UGSs) in West Bengal, focusing on the impact of the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) on small towns. Rapid urbanisation has led to significant reductions in green spaces across India, affecting environmental sustainability and quality of life. The study identifies three key aspects of urban green space management: availability, financial allocation, and public awareness. The findings indicate that smaller towns, particularly those outside the Kolkata Metropolitan Area (KMA), have shown notable improvements in green spaces, largely due to AMRUT's focus on less developed regions. However, green space per person remains below the World Health Organization's (WHO) recommended levels, especially in larger KMA towns. Financial analysis reveals that mid-sized KMA towns allocate more resources to green space, suggesting stronger urban planning frameworks. Conversely, larger non-KMA towns show limited investment, highlighting financial constraints and lower prioritisation. Public surveys indicate different patterns of engagement between genders, with males engaging more in structured activities like exercising, while females predominantly use green spaces for walking. The study emphasises the need for continued investment and strategic planning to promote equitable green space development, ensuring sustainability and improved living standards across urban centres.

Keywords

Urban Green Spaces, AMRUT, Accessibility, Urbanisation.

Introduction

Urbanisation not only influences the size and number of cities but also transforms their structural composition. A key aspect of these transformations is the natural environment,

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both within and around urban areas. Urbanisation exerts significant pressure on the environment, leading to a reduction in green spaces in cities across both the developed and developing world (Abebe and Megento, 2016). Urban areas worldwide are becoming increasingly congested and polluted, while also facing growing climate risks and threats to human comfort and environmental justice (Blanco et al., 2009). The loss of urban green spaces is observed in both developing and developed countries, largely driven by the rate of urban growth, which is influenced by socio-economic factors (Gairola & Noresah, 2010). Additionally, the expansion of human settlements on urban fringes is a major cause of the loss of green spaces resulting in negative environmental impacts (Yuan et al., 2005).

To address these challenges, increasing attention is being given to the role of green spaces, such as trees, parks, gardens, playgrounds, and forests, through the concept of green infrastructure. Urban Green Spaces (UGSs) are regarded as the lungs of city dwellers, crucial for fostering sustainable development and improving residents' quality of life (Anteneh et al., 2023). UGSs have immense potential to regulate the city's microclimate (Li et al., 2021), reduce the risk of urban flooding (Liu et al., 2023; Pei et al., 2024), absorb pollutants, and release oxygen (Li et al., 2018). Therefore, urban green spaces offer a wide array of services that can address numerous urban challenges and enhance the quality of life for city residents. The primary challenge for urban development today is not only to increase green space but also to preserve and enhance existing green cover.

The Government of India has introduced guidelines and programmes to make cities greener, healthier, and more sustainable. According to the Urban and Regional Development Plans Formulation and Implementation (URDPFI) guidelines of 2015 issued by the Ministry of Urban Development, the proportion of recreational areas to total developed areas should be between 12-14 per cent in small towns, 18-20 per cent in medium towns and large cities, and 20-25 per cent in metropolitan areas. Again in 2015, the Ministry of Urban Development issued new guidelines for cities to increase their green cover to more than 15 per cent under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

Within this broader context, this paper focuses on three aspects like the availability, financial allocation, and awareness of urban green spaces across different sizes of cities in West Bengal. Rapid urbanisation has led to a decline in green features in several Indian cities, with studies on land use transitions highlighting significant environmental losses. For instance, Bengaluru experienced around 92.5 per cent increase in built-up area from 1973 to 2013, while green spaces decreased from 68 to 14 per cent. Similarly, Mumbai land use shows around 60 per cent loss in vegetation between 1977 and 2017 (Udas-Mankikar & Driver, 2021). However, no study has yet explored the dynamics of green space across different city size and city classes.

Importance of Green Spaces in Urban Environments

Urban Green Spaces (UGSs) are areas of vegetation within cities that provide environmental, social, and health benefits to residents. These spaces encompass parks, gardens, greenways, nature reserves, and other natural elements. UGSs are vital for sustainable urban development, enhancing air quality, reducing urban heat islands, and offering recreational opportunities. They also promote biodiversity and contribute to the overall well-being of urban population. Integrating UGSs into urban planning helps create a balanced ecosystem and improves the quality of life for city dwellers.

The liveability of cities largely depends on the design, management, and maintenance of urban green spaces, as well as other open public areas that contribute to the social network and visual appeal of urban environments. Research on UGSs and health often focuses on parks and green cover. Limited access to parks has been linked to higher mortality rates (Coutts, Horner, & Chapin, 2010), while increased green cover has been shown to have protective health benefits (Villeneuve et al., 2012). Parks also encourage physical activity, reducing the risk of chronic diseases. (Grahm & Stigsdotter, 2010). Numerous studies show a connection between park proximity and increased physical activity (Cohen et al., 2006). The World Health Organisation (WHO) estimates that physical inactivity, often due to poor walkability and limited access to recreational areas, contributes to about 3.3 per cent of global deaths (WHO, 2016).

Neoliberal Policies and Urban Greening Initiatives in West Bengal

Within neoliberal planning agendas, the well-being effects of green spaces are increasingly framed through 'austerity urbanism (Peck, 2015).' This approach implies that assigning monetary value to nature and its benefits often limits policymakers to focus on reducing the financial burden on publicly funded services. Advocates of this theory argue that investing in green spaces can yield measurable financial savings for public institutions, hence framing green infrastructure is a cost-effective approach to public welfare.

Thus, the political significance of urban environmentalism must be understood not merely in terms of the environment itself but also in connection to the socio-spatial transformations driven by neoliberal urbanisation. A key aspect of this transformation is the creation of a sense of well-being through environmental improvements framed as economically efficient solutions to public service needs. Neoliberal urbanisation's economic, social, and cultural shifts have generated widespread uncertainty, stress, and conflict, prompting changes in state policy and welfare system reforms. In this context, the environment has emerged as a domain where social welfare can be discursively framed and materially produced at minimal public cost compared to traditional welfare provisions like job creation, housing, or healthcare (Brand, 2003).

City planning authorities, as coordinators of environmental expertise, have the potential to redefine local welfare by emphasizing the relationship between urban

environments and quality of life. By focusing on natural resource systems and environmental enhancements, authorities can indirectly promote well-being without directly addressing underlying social inequalities. This paper explores the influence of austerity urbanism on green space management by Urban Local Bodies (ULBs) of different sizes in West Bengal, examining how financial constraints and neoliberal agendas shape decisions regarding Urban Green Spaces (UGSs) provision and the framing of public welfare.

Methodology

Details of the methodology are discussed in the following different sub-sections.

Study Area

In 2015, the AMRUT project was announced and implemented across 55 towns in West Bengal, spanning 18 districts. In North Bengal, only the towns in Koch Bihar and Alipurduar districts did not implement the AMRUT scheme, while in South Bengal, towns in Birbhum and Jhargram districts did not participate.

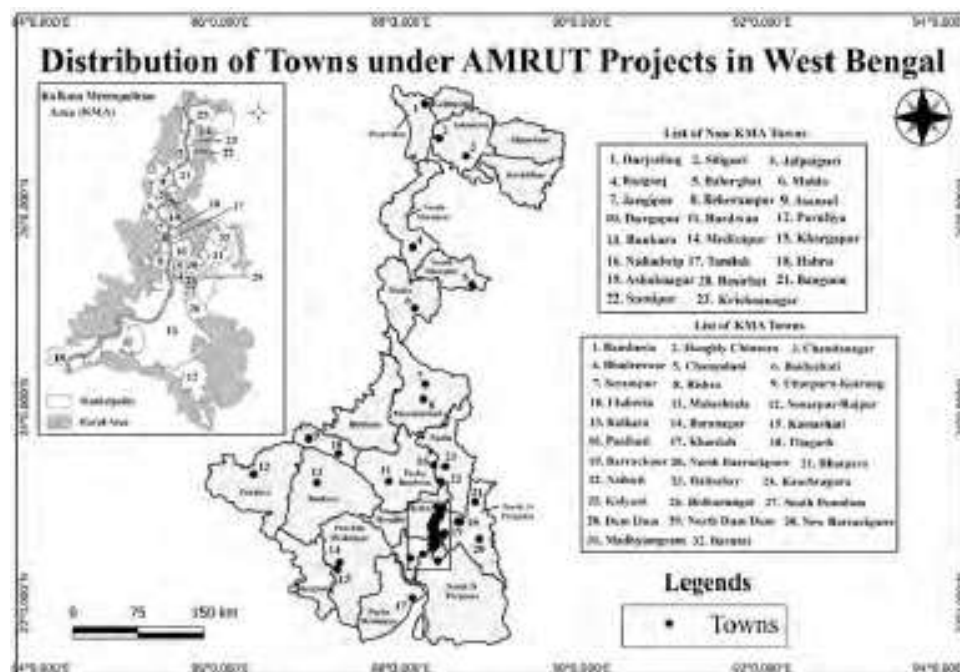


Figure 1: Distribution of Towns under AMRUT Scheme.

Source: Map prepared based on AMRUT data, 2017.

To provide a clearer understanding of the towns, they have been categorised based on population size. Table 1 shows the classification of towns and the number of towns in each category.

Table 1: Classification of AMRUT Towns in West Bengal by Population Size and Location

Town Sizes based on Population	Total Towns identified under AMRUT in West Bengal	Towns within KMA	Towns Outside KMA
Less than 2 lakh	35	19	16
2 to 4 lakh	12	8	4
4 to 6 lakh	6	3	3
Above 6 lakh	2	2	0
Total	55	32	23

Source: State Annual Action Plan 2016-17.

Table 1 indicates that the majority of towns implementing the AMRUT scheme have populations below two lakh, with most of these towns situated outside the Kolkata Metropolitan Area (KMA). However, overall, the number of towns participating in the scheme within the KMA exceeds those in non-KMA areas.

Data Source

To evaluate the green infrastructure of the state of West Bengal, the State Annual Action Plan (SAAP) was used to analyse temporal data on green cover prior to 2015-16. After the implementation of AMRUT, the green cover was reassessed in 2017-18. Additionally, the Census of India 2011 served as a key reference for the analysis. The financial data for the municipalities was sourced from the Ministry of Housing and Urban Affairs, Government of India.

Methods Undertaken

The distribution of green cover within a city is a critical factor. The quantity and accessibility of urban green spaces are assessed by examining their most significant and measurable physical attributes. This evaluation focuses on two key metrics like the percentage of green spaces relative to the city's total area and the amount of green space per resident, measured in square meters. These indicators allow for a comparative analysis of green space availability in the Kolkata Metropolitan Area (KMA). According to the World Health Organization (WHO), a minimum of 9 square meters of green space per person is recommended, with an ideal target of 50 square meters per person.

This paper examines the availability of green spaces and the allocation of municipal funds for green spaces, categorised by the population size of the towns, as previously mentioned. Following this, public awareness regarding green spaces is assessed through a semi-structured questionnaire.

To evaluate the awareness of local green spaces, particularly formal green spaces, among residents, the author targeted a sample population aged between 19 to 23. This

age group was chosen because they are typically more active and are presumed to visit green spaces for various purposes. A total of 152 individuals were surveyed across 10 municipalities where the AMRUT programme has been implemented. Furthermore, the sample was drawn from households located within 200 meters of a formal green space, based on the assumption that residents in close proximity are more likely to visit these areas. The municipalities surveyed include Serampore, Baidyabati, Bhatpara, Hooghly-Chinsura, Rishra, Uttarpara-Kotrung, Chandannagore, Barasat, and Bansberia. From each ULBs 15 to 16 samples have been taken for analysis.

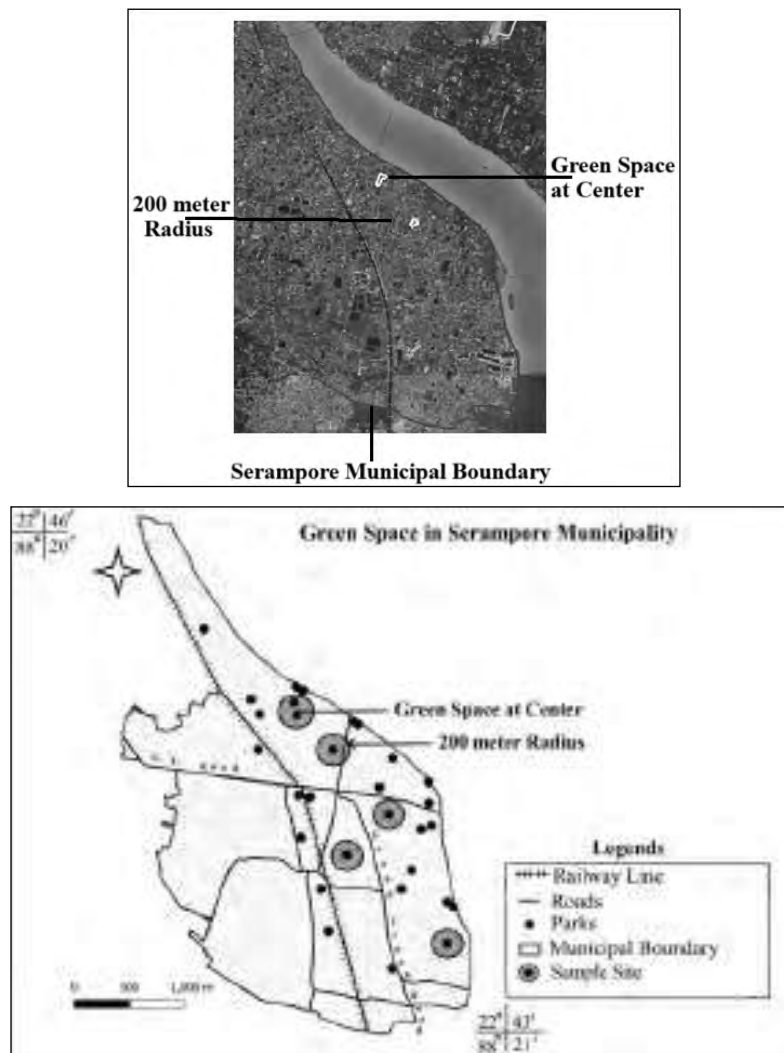


Figure 2: Green Space in Serampore Municipal Area.

Source: Google Earth, 2024.

Figure 2 illustrates the process of identifying green spaces and determining the sample population for the study. Green spaces were mapped, and a 200-meter radius

was drawn around each area to define the sample selection zone. Within this radius, individuals aged between 19 to 23 were identified as the target population for data collection. This approach ensures that the study focuses on those who are likely to use and benefit from nearby green spaces, allowing for a more accurate assessment of green space accessibility and usage. The 200-meter radius was chosen to represent a reasonable walking distance, enhancing the study's relevance to urban planning and green space management. Given that population density in the surveyed municipalities remains consistently high, ranging from 7,500 to 20,000 people per square kilometre, access to parks and recreational areas becomes even more critical. However, despite population sizes varying between 120,000 and 380,000, the distribution of formal green spaces, such as parks, is highly uneven, limiting accessibility for many residents, as illustrated in Figure 2. Addressing these disparities is crucial for equitable urban development.

Green Space Development under AMRUT in West Bengal

To address the needs of the rapidly growing urban population for safe drinking water, sanitation, and a clean environment, the Central Government introduced the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in 2015. This mission aims to ensure access to safe drinking water, promote green space development, and establish effective sewerage and septage management systems. As part of this initiative, 55 cities in West Bengal have been included under AMRUT to build infrastructure that provides universal coverage for safe drinking water supply, sewerage systems, transportation, drainage, and the enhancement of green spaces. Additionally, the mission focuses on improving service delivery by enhancing human resource capacity, all in line with the AMRUT mission guidelines.

Table 2: Projects and Investment per Town under AMRUT in West Bengal

Towns based on Population	Projects per Towns under AMRUT		Investment (in million rupees) per Town under AMRUT	
	KMA	Non-KMA	KMA	Non-KMA
Less than 2 lakh	4 (76)	3 (48)	6.10	6.00
2 to 4 lakh	7 (56)	6 (24)	13.16	6.87
4 to 6 lakh	8 (24)	11 (33)	10.67	32.5
Above 6 lakh	10 (20)	—	72.5	—

Source: State Annual Action Plan 2017-18, Parentheses figure shows total number of projects, figures outside the parentheses represent the projects per town.

Table 2 illustrates a detailed analysis of the number of projects and the amount of money invested per town under the AMRUT scheme, with a focus on town size and their location, either within the Kolkata Metropolitan Area (KMA) or outside it (non-KMA). Out of the 55 Urban Local Bodies (ULBs) in West Bengal implementing the

AMRUT scheme, 32 are in KMA, and the rest are beyond it. The scheme addresses green space development across various town sizes.

Towns with population under 2 lakhs implemented 76 projects in KMA, compared to 48 projects in non-KMA towns. On an average, KMA towns implemented four projects per town with an investment of ₹6.10 million, while non-KMA towns implemented three projects with a slightly lower investment of ₹6.00 million (Table 2). For towns with populations between 2 to 4 lakh, KMA towns executed seven projects per town with an investment of ₹13.16 million, almost double the ₹6.87 million invested in non-KMA towns, where six projects were implemented. Towns in this category executed 56 projects in KMA and 24 projects outside KMA. In towns with populations between 4 to 6 lakh, non-KMA towns implemented more projects per town (11) than KMA towns (8). Interestingly, the investment in non-KMA towns was significantly higher at ₹32.5 million per town, compared to ₹10.67 million in KMA towns. Finally, the largest towns, found only in KMA, implemented 10 projects per town with a significant investment of ₹72.5 million. There are no corresponding large towns in the non-KMA category. This analysis highlights the differences in project numbers and investment between KMA and non-KMA towns, with larger KMA towns receiving higher investments, while some mid-sized non-KMA towns saw substantial project numbers and funding.

Findings

Details of the findings are as follows.

Availability of Green Space in Urban Areas

Under the AMRUT mission, each Urban Local Body (ULB) developed a Service Level Implementation Plan (SLIP), and data shows a notable improvement in green space coverage following the programme's implementation. According to the State Annual Action Plan, prior to AMRUT, green cover in the Kolkata Metropolitan Area (KMA) ranged from approximately 7 per cent to 13 per cent. In non-KMA areas, green cover was slightly lower, ranging from 6 per cent to 13 per cent.

Table 3: Percentage of Green Spaces in Towns of West Bengal based on Population Size

Town Size	Percentage of Green Spaces in 2015-16		Percentage of Green Spaces in 2017-18	
	KMA	Non-KMA	KMA	Non-KMA
Less than 2 lakh	7.50	14.90	9.82	16.53
2 to 4 lakh	11.06	7.11	12.82	9.61
4 to 6 lakh	13.67	6.06	14.68	9.56
Above 6 lakh	7.85	—	10.37	—

Source: SAAP (2017-18).

Table 3 provides an overview of the percentage increase in green space between 2015-16 and 2017-18 for towns of different population sizes, within and outside the Kolkata Metropolitan Area (KMA), following the implementation of the AMRUT scheme. Towns with less than 2 lakh people show notable green space improvements, particularly outside KMA, where it increased from 14.90 per cent in 2015-16 to 16.53 per cent in 2017-18. In KMA, the growth was also significant, rising from 7.50 per cent to 9.82 per cent. This indicates that smaller towns, especially in non-KMA areas, saw positive changes in green infrastructure. Towns with populations between 2 to 4 lakhs saw a more modest improvement in non-KMA areas, where green space increased from 7.11 per cent to 9.61 per cent while KMA towns experienced a rise from 11.06 per cent to 12.82 per cent. Non-KMA areas, despite starting with less green space, have made progress, although they lag behind KMA towns in this category. In towns with populations between 4 to 6 lakhs, the green space percentage grew slightly in non-KMA areas, from 6.06 per cent to 9.56 per cent. In KMA towns, the increase was marginal, from 13.67 per cent to 14.68 per cent, suggesting that larger towns had already made investments in green infrastructure. For towns above 6 lakhs, only KMA data is available, showing a significant jump from 7.85 per cent to 10.37 per cent. This highlights a concentrated effort to improve green spaces in larger towns within the KMA, although comparable data from non-KMA towns is missing.

Overall, the data suggests that while both KMA and non-KMA towns have made strides in enhancing green spaces, non-KMA towns, particularly smaller ones, have shown more dynamic growth, possibly due to the AMRUT mission's focus on improving infrastructure in less developed regions. This highlights a common challenge in both regions: limited green space prior to the initiative. However, the successful execution of Service Level Improvement Plans (SLIPs) under AMRUT has resulted in significant improvements, indicating that the scheme has positively impacted urban green infrastructure across both KMA and non-KMA towns. This improvement is crucial for addressing urban challenges such as environmental sustainability and quality of life in these areas.

Table 4: Per Person Green Space in Towns of West Bengal based on Population Size

Town Size	Per person Green Space (sq. meter) in 2015-16		Per person Green Space (sq. meter) in 2017-18	
	KMA	Non-KMA	KMA	Non-KMA
Less than 2 lakh	7.59	18.23	9.90	20.47
2 to 4 lakh	8.54	20.36	10.33	27.32
4 to 6 lakh	10.84	14.61	11.92	23.64
Above 6 lakh	3.45	—	4.58	—

Source: SAAP 2017-18.

The improvement in per capita green space, as seen in Table 4, aligns with the broader efforts under the AMRUT scheme to enhance urban environments across West Bengal. Table 4 highlights that while all towns, both within and outside the Kolkata Metropolitan Area (KMA), saw increases in green space per person between 2015-16 and 2017-18, non-KMA towns made more substantial progress, particularly in smaller and medium-sized towns.

For towns with less than 2 lakh people, non-KMA areas experienced a significant increase in green space per person, from 18.23 sq. meters in 2015-16 to 20.47 sq. meters in 2017-18. KMA towns also saw improvement, though less dramatic, from 7.59 sq. meters to 9.90 sq. meters. This indicates that smaller towns, especially in non-KMA areas, made notable strides in enhancing per capita green space, reflecting efforts to prioritise green infrastructure in these regions. Towns with populations between 2 to 4 lakh experienced considerable growth in non-KMA areas, where per capita green space rose from 20.36 sq. meters to 27.32 sq. meters. In KMA, the increase was smaller, from 8.54 sq. meters to 10.33 sq. meters. Despite KMA's progress, non-KMA towns in this category significantly outpaced them, highlighting a stronger focus on green space development in less densely populated areas. In towns with populations between 4 to 6 lakhs, both KMA and non-KMA areas saw increases, but non-KMA towns again demonstrated more impressive growth, rising from 14.61 sq. meters to 23.64 sq. meters. In KMA towns, the increase was modest, from 10.84 sq. meters to 11.92 sq. meters, suggesting limited improvements in these larger KMA towns. For towns above 6 lakhs, the increase in per capita green space within KMA was modest, from 3.45 sq. meters to 4.58 sq. meters. No data is available for non-KMA towns in this category, but the relatively low figures for KMA towns reflect the challenge of providing green space in highly urbanised and densely populated areas. Overall, the data shows that non-KMA towns, regardless of size, made more substantial gains in per capita green space, likely due to lower population densities and greater available land for development. In contrast, KMA towns, especially larger ones, continue to struggle to meet green space needs, though incremental improvements have been made.

This trend complements the earlier analysis, which showed that the implementation of green infrastructure projects under the AMRUT scheme contributed to an overall rise in green cover. As noted previously, KMA towns had a lower baseline green cover percentage compared to non-KMA towns before the Programme's implementation, and while both areas improved, non-KMA towns saw greater relative gains. The increase in per capita green space is a critical measure of success for the AMRUT scheme, particularly in light of the WHO's recommendations for urban green space. While non-KMA towns now approach these guidelines, larger towns in the KMA still fall short, reflecting ongoing challenges in densely populated areas. The findings underscore the need for continued investment and strategic planning in urban green infrastructure, particularly in areas with high density area, to ensure equitable access to green spaces

and improve the quality of urban life across West Bengal. Notably, municipalities within the Kolkata Metropolitan Area (KMA) have significantly higher population densities, yet the distribution of parks is highly uneven, limiting accessibility and restricting residents' opportunities to benefit from these spaces. Addressing these disparities through improved planning and policy interventions is essential to ensure that urban green infrastructure serves all communities effectively.

Allocation of Finance for Green Spaces

The allocation of funds varies based on the size and population of towns, with larger cities typically receiving more substantial investments due to greater demands on infrastructure. Green space development is also financed through state budgets, international funding agencies, and public-private partnerships.

Despite various efforts, financial constraints often limit the extent and quality of green spaces, particularly in smaller towns and lower-income urban areas. Ensuring adequate, sustained funding for green space development is crucial for promoting environmental sustainability, public health, and enhancing the quality of life.

Table 5: Income and Expenditure of the ULBs

Town Size	Income of ULBs in 2022-23		Expenditure of ULBs in 2022-23	
	KMA	Non-KMA	KMA	Non-KMA
Less than 2 lakh	256.79	396.37	363.73	433.93
2 to 4 lakh	677.07	635.35	752.78	499.95
4 to 6 lakh	1065.74	1341.08	1082.88	1623.19
Above 6 lakh	24386.34	—	24402.76	—

Source: Ministry of Housing and Urban Affairs, 2023.

Table 5 provides insights into the income and expenditure of Urban Local Bodies (ULBs) in West Bengal during the fiscal year 2022-23, categorised by town size.

For towns with populations of less than 2 lakh, ULBs in non-KMA areas generated significantly higher income (₹396.37 million) than their KMA counterparts (₹256.79 million). However, both KMA and non-KMA towns show comparable expenditures, with non-KMA towns spending slightly more (₹433.93 million compared to ₹363.73 million). This suggests that non-KMA towns, despite having higher revenues, may be more stretched in terms of their financial commitments. In towns with populations between 2 to 4 lakh, KMA towns generated slightly more income (₹677.07 million) than non-KMA towns (₹635.35 million), but they also had higher expenditures (₹752.78 million vs. ₹499.95 million). This indicates a more substantial financial burden on KMA towns, due to higher infrastructure demands and operational costs. For towns with population between 4 to 6 lakh, non-KMA towns outperformed KMA towns in both income (₹1341.08 million vs. ₹1065.74 million) and expenditure (₹1623.19 million vs. ₹1082.88 million), suggesting that non-KMA towns in this category are managing

larger-scale projects and services, requiring greater financial outlay. Finally, for towns with populations above 6 lakhs, showing a substantial income of ₹24,386.34 million and an almost identical expenditure of ₹24,402.76 million. This reflects the significant financial scale and demands of the largest towns in KMA, which likely encompass more complex urban services, infrastructure, and development needs. Overall, the table highlights the financial disparity between KMA and non-KMA towns, with non-KMA towns often having higher incomes but also facing greater expenditure challenges, particularly in mid-sized towns. The findings suggest a need for targeted financial planning and support to balance income generation with infrastructure demands, especially in non-KMA areas.

Table 6: Expenditure for Green Space and Green Space Availability

Town Size	Percentage of Expenditure on green space		Per person expenditure (in rupees) on green space	
	KMA	Non-KMA	KMA	Non-KMA
Less than 2 lakh	2.10	3.04	58.78	97.95
2 to 4 lakh	3.03	1.55	78.83	33.47
4 to 6 lakhs	11.86	0.04	302.19	1.14
Above 6 lakh	1.60	—	140.47	—

Source: Ministry of Housing and Urban Affairs, 2023.

Table 6 presents data on the percentage of expenditure allocated to green spaces and the per capita expenditure (in rupees) on green spaces by Urban Local Bodies (ULBs).

In towns with populations under 2 lakh, non-KMA towns allocate a higher percentage of their budget (3.04 per cent) to green spaces compared to KMA towns (2.10 per cent), with per capita spending also greater at ₹97.95 versus ₹58.78 in KMA. This indicates that smaller non-KMA towns prioritise green space investment, likely due to more available land or community-driven initiatives. In towns with population between 2 to 4 lakh, KMA towns allocate 3.03 per cent of their budget to green spaces, while non-KMA towns allocate 1.55 per cent. Per capita expenditure reflects this, with KMA towns spending ₹78.83 compared to ₹33.47 in non-KMA areas, suggesting that mid-sized KMA towns emphasize green infrastructure more, driven by urban planning focused on environmental quality.

For towns with 4 to 6 lakh populations, KMA towns allocate 11.86 per cent of their budget to green spaces, whereas non-KMA towns allocate just 0.04 per cent. Per capita spending shows a similar trend, with KMA towns at ₹302.19, compared to only ₹1.14 in non-KMA towns. This disparity indicates significant investment in mid-sized KMA towns due to higher urban density and the need for recreational spaces. For towns above 6 lakh, larger KMA towns allocate 1.60 per cent of their budget to green spaces, with a notable per capita expenditure of ₹140.47, reflecting the essential role

of green spaces in densely populated areas to enhance livability. Data for non-KMA towns in this category is unavailable. The data shows that mid-sized KMA towns (with 4 to 6 lakh population) invest more in green space development than non-KMA towns, reflecting stronger urban planning and greater emphasis on sustainability. In contrast, non-KMA towns, especially larger ones, display limited investment, likely due to financial constraints or lower prioritisation. These disparities suggest the need for enhanced funding and policy support for non-KMA towns, ensuring equitable access to quality green spaces across all urban areas for a healthier, sustainable environment.

Awareness of Green Space by Local Population

Research has consistently demonstrated that Urban Green Spaces (UGSs) are essential for enhancing citizens' well-being. Moreover, the long-term sustainability of urban areas relies heavily on the availability and accessibility of these green spaces. Access to UGSs has thus become a pressing environmental justice issue, particularly in densely populated cities. One of the primary causes of this disparity is the concentration of formal green spaces, such as parks, in affluent neighbourhoods, while marginalised areas remain underserved. Additionally, the rapid conversion of both blue and green spaces into built-up areas due to urban expansion further exacerbates the issue, limiting equitable access to these essential environmental resources (Karmakar, 2025). However, city managers often face significant challenges in creating new green spaces due to spatial and financial constraints (Kronenberg, 2015). The most desirable green spaces are frequently limited in size or located on the city's outskirts, which has shifted the focus to alternative areas like cemeteries, allotment gardens, or residential greenery. Recently, attention has turned to informal green spaces (IGSs), which are vegetated patches scattered throughout the city that are not officially recognised as UGSs but still provide benefits such as walking paths, pet areas, and urban agriculture lots (Rupprecht & Byrne, 2014). Against this backdrop, a survey was conducted among residents of urban local bodies in the Kolkata Metropolitan Area (KMA) to assess their awareness and use of green spaces. Table 7 reveals that males are more likely to visit green spaces daily (9.90 per cent), while females show slightly higher weekly visitation (22.36 per cent compared to 19.07 per cent of males)..

Table 7: Green Space Visits by Local Residents

Frequency of Visits	Male (in %)	Female (in %)
Daily	9.90	3.29
Weekly	19.07	22.36
Occasionally	9.86	35.52

Source: Primary Survey, 2024, n = 152, figures in percentage.

The data of Table 7 shows notable gender differences in green space use. While 35.52 per cent of females visit green spaces occasionally, only 9.86 per cent of males do, suggesting that women may engage with these areas sporadically or on special

occasions rather than regularly. Males are more consistent in daily visits, aligning with their preference for structured activities like exercise (7.24 per cent of males versus 3.29 per cent of females). This pattern indicates that men are more likely to incorporate green spaces into their daily routines, while women may visit less frequently but for diverse purposes. Overall, these trends highlight varying engagement patterns based on gender.

Table 8: Activities Engaged in Green Space by Local Residents

Activities	Male (in %)	Female (in %)
Exercising	7.24	3.29
Relaxing	15.79	15.79
Socializing	6.58	3.29
Walking	9.87	38.16

Source: Primary Survey, 2024, n=152, figures in percentage.

Both genders engage equally in relaxing activities (15.79 per cent), indicating that green spaces are a shared refuge for rest and stress relief. This highlights their role as communal areas for leisure. However, socialising is more common among males (6.58 per cent) than females (3.29 per cent), possibly due to cultural factors or greater comfort in public spaces. The most notable difference is in walking, with 38.16 per cent of females using green spaces primarily for this purpose, compared to 9.87 per cent of males. Walking's accessibility, lower cost, and versatility likely make it a preferred activity for women. Overall, males favour structured activities, while females mainly use green spaces for walking, reflecting broader social patterns.

Table 9 presents data on local residents' perceptions of changes in green spaces within their towns, highlighting gender-based differences. Table 9 indicates that a higher percentage of both males (36.18 per cent) and females (44.74 per cent) have observed changes in green spaces, suggesting a general awareness of developments or modifications in these areas among the population.

Table 9: Green Space Changes in Towns

Perception of green space changes in the town	Male (in %)	Female (in %)
Yes	36.18	44.74
No	3.29	15.79

Source: Primary Survey, 2024, n = 152, figures in percentage.

The data of Table 9 reveals a disparity in perceptions of green space changes, with 44.74 per cent of females and 36.18 per cent of males reporting they noticed changes. This may indicate that women are more attentive to local environmental shifts, likely due to their regular use of green spaces for activities like walking. Conversely, 3.29 per cent of males and 15.79 per cent of females did not notice any changes, suggesting

a potential communication gap, particularly for women less engaged with these areas. Overall, while awareness of green space changes is present, improved communication and engagement strategies are needed to ensure all residents are informed and involved in urban planning discussions.

Table 10 indicates the awareness levels of local government's green space initiatives among male and female residents. From the data, it is evident that 25.81 per cent of females reported being aware of the local government's green space initiatives, which is higher than the 16.13 per cent of males who reported the same. Conversely, 32.26 per cent of females were not aware of these initiatives, compared to 25.81 per cent of males who were also unaware.

Table 10: Awareness of Local Government's Green Space Initiatives

Response to Awareness of Government Initiatives	Male (in %)	Female (in %)
Yes	16.13	25.81
No	25.81	32.26

Source: Primary Survey, 2024, n=152, figures in per centage.

This suggests that while a greater proportion of females are informed about green space initiatives, a slightly higher percentage of them are also unaware, indicating a more polarised distribution of awareness among females compared to males.

Table 11: Perception on Green Space Benefits

Benefits of Green Spaces	Male (in %)	Female (in %)
Community Engagement	5.26	1.32
Improved Air Quality	7.24	5.92
Lower Temperature	10.53	12.50
Increased Property Values	14.47	11.84
Health Benefits	15.13	15.79

Source: Primary Survey, 2024, n=152, figures in percentage.

Table 11 illustrates the perceived benefits of green spaces as reported by male and female residents, highlighting differences in how each gender values specific benefits. Health benefits are the most widely recognised by both groups, with 15.79 per cent of females and 15.13 per cent of males acknowledging them, showing broad agreement on their importance. More females (12.50 per cent) than males (10.53 per cent) see green spaces as beneficial for lowering temperatures. Conversely, increased property values are valued more by males (14.47 per cent) than females (11.84 per cent), suggesting a stronger economic perception among men. Slightly more males (7.24 per cent) than females (5.92 per cent) consider improved air quality a benefit. Although few respondents see community engagement as a significant benefit, more males

(5.26 per cent) than females (1.32 per cent) do, indicating a difference in perceptions of community interactions through green spaces. Overall, these patterns show that while health benefits are a shared priority, males tend to focus more on economic and community aspects, while females emphasise environmental benefits like temperature regulation.

Way Forward

This paper examines three fundamental aspects of urban green spaces: availability, funding allocation, and local perceptions. The findings indicate a slight improvement in green space coverage across West Bengal following the implementation of the AMRUT scheme. However, the amount of green space per person remains below the World Health Organisation's recommended levels, with slower growth observed in the Kolkata Metropolitan Area (KMA) compared to non-KMA towns. Smaller non-KMA towns showed notable progress, likely due to AMRUT's focus on infrastructure development in less developed regions. Despite initial challenges, the effective implementation of Service Level Improvement Plans (SLIPs) under AMRUT has enhanced urban green infrastructure in both KMA and non-KMA towns. Financial data reveal that mid-sized KMA towns (population between 4 to 6 lakh) allocate more resources to green spaces than their non-KMA counterparts, reflecting stronger urban planning and community advocacy. In contrast, larger non-KMA towns demonstrate limited investment, indicating financial constraints and lower prioritisation. Local perceptions also differ by gender, with males visiting green spaces more regularly for structured activities, while females primarily use them for walking, suggesting social, cultural, and logistical influences. The findings underscore the need for balanced support to develop green spaces across all urban areas.

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Barriers to Smart City Development: A Case of Dharamshala Smart City of Himachal Pradesh, India

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Abstract

This paper identifies the primary barriers to smart city development in Shimla, Himachal Pradesh, by analysing expert perceptions and citizen satisfaction levels. The data for this study has been gathered by smart city experts and a cross-section of the general public regarding their perceptions and satisfaction levels respectively. Drawing upon experts' feedback and a review of existing literature, the identified barriers are subsequently assessed and ranked using the Analytic Hierarchy Process (AHP). Smart Cities are solutions to urban development related problems such as provision of basic amenities, viz. water supply, sewerage, sanitation, traffic congestion and housing quality, integrated with information and communication technology that can be used as a source for future predictions, enabling convergence of projects with local authorities and organisations. It has been concluded from the study that there is a need for real time accessibility of data-based planning and decision-making in Dharamshala smart city.

Keywords

Smart Cities, Information and Communication technology, Barriers to smart city development, Analytic Hierarchy Process.

Introduction

Cities are key drivers of economic growth and essential for improving delivery of urban services (Sambher and Sharma, 2023). Urbanisation brings changes in both social and economic characteristics of the city, adding to challenges for government and citizens (Attaran, 2022). Traffic jams, pollution, garbage disposal issues, improper

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sanitation, water supply, healthcare, accessibility, sewerage problems, and housing quality are some of the issues faced by the city, affecting the health and quality of life of people (Sambher and Sharma, 2020). The term “Smart City” has been coined towards the end of 20th century which signifies how urban development has been shifting towards technology, innovation and globalisation (Gibson et al., 1992). Smart community has become a global phenomenon existing all over the world (Coe. et al., 2012). A smart city is built upon Information and Communication Technology (ICT) to foster sustainable economic development and ensure high living standards (Zubareva et al., 2019). As a development strategy, it embeds digital infrastructure to simplify work processes and enable both entrepreneurial growth and regulatory efficiency. Such cities are often referred to as “Wired Cities,” (Dutton et al., 1987), Intelligent Cities (Komninos, 2011) or “Smart Cities.”

Crucial solutions for the development of smart city are to enable convergence and integration of projects with local authorities and organisations (Robert, 2008). The arrival of smart city concept has contributed to all fields inclusive of urban public safety, manufacturing, production, environmental monitoring, traffic movement and control (Zhang and Yuan, 2015). It is largely technocratic which creates a platform for innovation and creativity that facilitates social, economic, environmental and cultural development, enhancing efficiency and sustainability (Allwinkle and Cruickshank, 2011). A Smart City is defined as a safe, secure, and environmentally green urban space that functions as an efficient centre of growth. It leverages advanced technologies and infrastructures—such as electronics, sensors, and internet services—to drive sustainable development while enhancing the overall quality of life for its citizens. (Hall, 2000). Sustainable Smart Cities in India have been studied by Shrivastava et al., (2019) in which indicators were selected after extensive literature review. It was concluded that gap needs to be filled between environmental sustainability and smart cities, with information and communication technology and involvement of citizens as core elements (Angelidou, 2015). Dharamshala is home to Tibetan migrants and is marked by rich cultural and community diversity. According to Mulchandani, Raval and Hajarnis (2019), there is a need of providing solutions to social and civic problems in the area. The smart paradigm concept describes smart homes as a way of improving the lives of citizens (Kim et al., 2012). Therefore, Smart city paradigm aims at enhancing quality of life of citizens through convergence of smartness and sustainability with provision of smart solutions as studied by Girardi and Temporelli (2017).

Smart Cities Mission

Cities are developing rapidly, witnessing tremendous changes and hundred cities are designated as “Smart Cities” under the Smart Cities Mission that was rolled out of AMRUT scheme by National Democratic Alliance led by BJP government, under the aegis of Ministry of Urban Development irrespective of population criteria. Smart City programme is one of the prestigious projects of Government of India. In the first

round of Smart City Mission, 20 cities were selected with most cities from southern India, while Bhubaneswar topped the list followed by Pune and Jaipur. Dharamshala in Himachal Pradesh, with an 87.5 per cent score, successfully made it into the second list of Smart City Mission with 12 other cities, with maximum cities from western India. In the 3rd round Patna, Shimla (with 85 per cent score), Bengaluru, Amaravati, Itanagar, Gangtok, Naya Raipur and Thiruvananthapuram were allowed to compete in the smart cities challenge but they got place in the 4th round of list. A total of 100 cities were selected in the 5th round of Smart City Mission for well-being and inclusive growth of the cities.

Need and Features

Cities are designated as “Smart” to solve the basic challenges of the city such as water supply issues, lack of innovation, traffic congestion, security of citizens, sanitation issues by focusing on digitisation and information and communication technology (Marinova, 2003). Need for smart cities depends upon application of input and output factors as shown in Figure 1. The prime aim of smart city projects lies in the development of urban infrastructure for making cities effective and liveable. There is an implication of redevelopment and retrofitting of the area for providing services to people with available infrastructure (Amirullah, 2016).

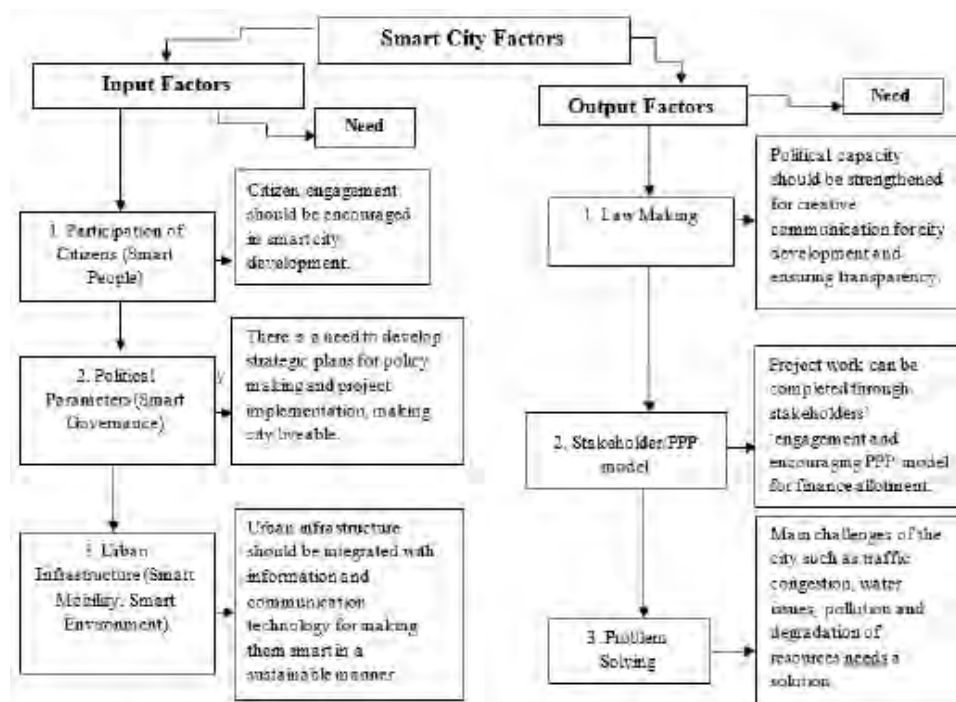


Figure 1: Major Input and Output factors for meeting the Needs of Smart City.

Source: Prepared by the authors.

Need and Significance of the Study

The present study examines barriers to smart city development based on experts' perception and spatial distribution of smart facilities in the city, i.e., helpful for better standardisation and development of civic amenities in Dharamshala city (Sambher and Sharma, 2023). This would enable the development of eco-tourism parks, alternative modes of transportation and redevelopment in Mcleodganj ward in Dharamshala; and promote area-based proposals in Bhagsunath, Mcleodganj, Kashmir House, Kotwali Bazar, and Ramnagar wards. The prime envision of smart city mission is to make: Dharamshala, a well-known tourist destination, i.e. resilient, sustainable and smart, i.e. liveable, economically vibrant, safe and inclusive.

This paper investigates barriers to smart city development by analysing experts' perceptions and conducting a literature review, specifically examining these barriers within the study area.

Data Base and Methodology

The present study is based on primary data. The data was collected through a set of interview schedules canvassed at ward level in the city by experts directly involved in the project's implementation. For sampling at ward level, an academic exercise of purposive sampling was undertaken. Experts comprising Municipal Corporation councillors in Dharamshala along with nominated councillors were surveyed. A total of 52 experts were surveyed, face-to-face interviews were conducted assisted by a pre-planned set of scheduled questions. Experts were asked questions related to smart city projects, their costing, implementation, obstacles encountered by them in the implementation and general public comprising 136 respondents were also surveyed based on stratified sampling.

Respondents covering each ward were surveyed by dividing wards into north, south, east and west zones. Based on their response in the study area, it had been observed that city is growing in terms of increasing population pressure, increase in rapid urban infrastructure, deforestation on a massive scale leading to climate change over the years that can be seen in terms of fluctuations in snowfall and rainfall. It also came into light that the local administration has been allegedly utilising funds provided by central government in the name of smart city further deteriorating condition of the city and putting acute pressure on the resources. The 38 barriers have been analysed using Analytic Hierarchy Process AHP by Saaty (1980) based on ranking assigned by experts with the creation of pair-wise matrix, computing criteria weights and assigning overall ranking to the obstacles (Figure 2).

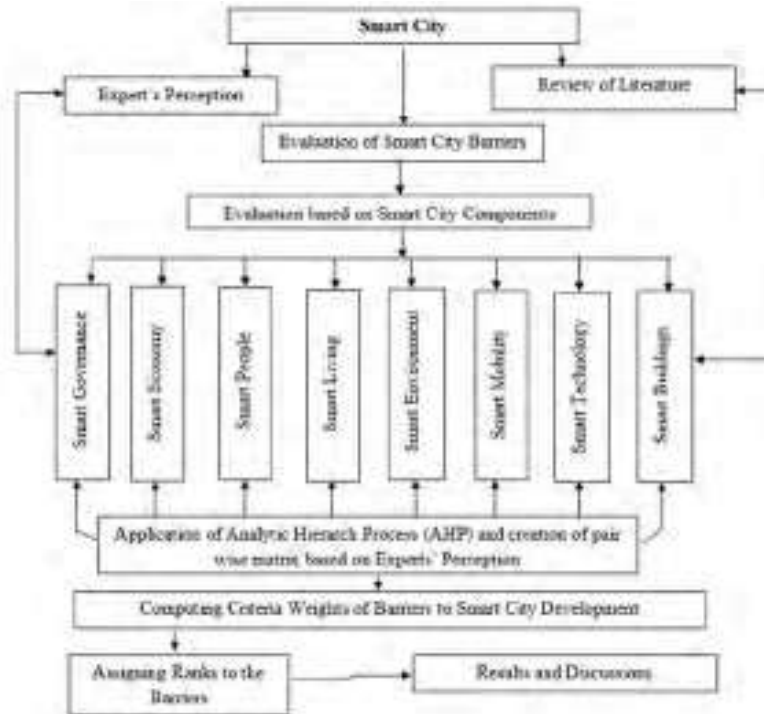


Figure 2: Flowchart Framework of Analytic Hierarchy Process.

Source: Prepared by authors.

Location of the Study Area

There are two cities of Himachal Pradesh selected under smart city mission, of which one lies in district Shimla, i.e. Shimla city and another in district Kangra i.e. Dharamshala city (Figure 3). Dharamshala was the first city to get honour of being designated as Smart City, with a population of 53,543 (Dharamshala Municipal Corporation, 2022). Dharamshala is the fastest growing urban centre after its declaration as smart city (Governor et al., 2016). Dharamshala, nestled in the picturesque Kangra Valley, draws visitors with its serene environment, and its significant role as the residence of His Holiness, the Dalai Lama. With the designation of Dharamshala as smart city, more wards are incorporated in municipal area thereby increasing its area from 10.63 km² to 28.30 km² and number of wards increased from 11 to 17. The rapid growth rate in population has caused many social and environmental problems to the ecology of the town. Therefore, to this demand of increasing urban development and its problems in core Dharamshala city “Smart City” project is a one-to-one solution. Though the project provides solution to many urban problems but there are various barriers to the smart city development that need to be identified and evaluated for efficient project implementation at ground level.

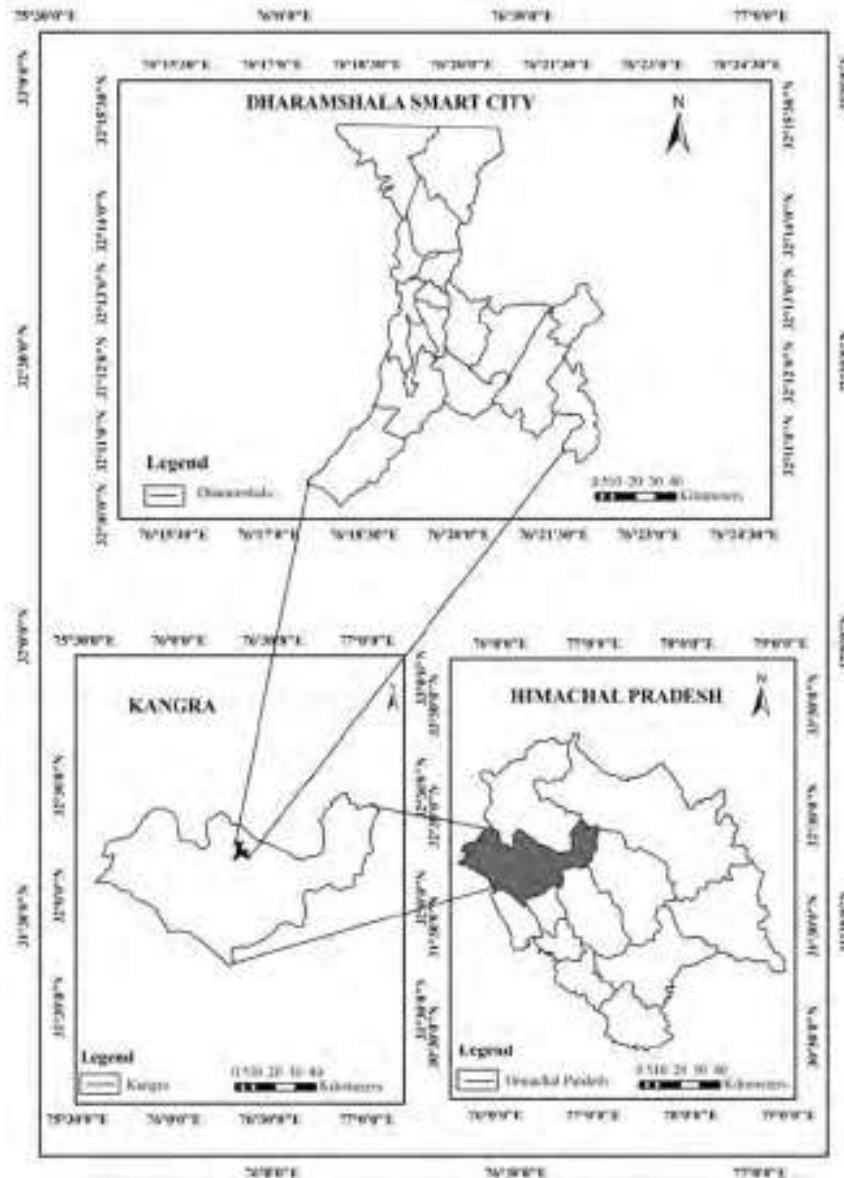


Figure 3: Study Area.

Source: Prepared by the authors.

Barriers and their Choice

On the basis of experts' perception and review of literature, a total of 38 barriers to smart city development were identified. There are eight smart city components with five barriers each under all components except smart buildings with only three barriers pertaining to the cities. These barriers (Figure 4) were selected on the basis of obstacles

faced by planners and policy makers for the implementation of projects in Dharamshala city. Barriers pertained to low technological advancement, lack of public participation, non-existence of information and communication technology, shortage of resources, low parking space, lack of innovation, creativity and flexibility, poor data availability, higher operational cost, less importance to IT skill and training, poor public private participation, low importance to political strategies, low competitiveness and political instability (Rana et al., 2019). Core smart city components along with barriers are shown in flowchart (Figure 4).

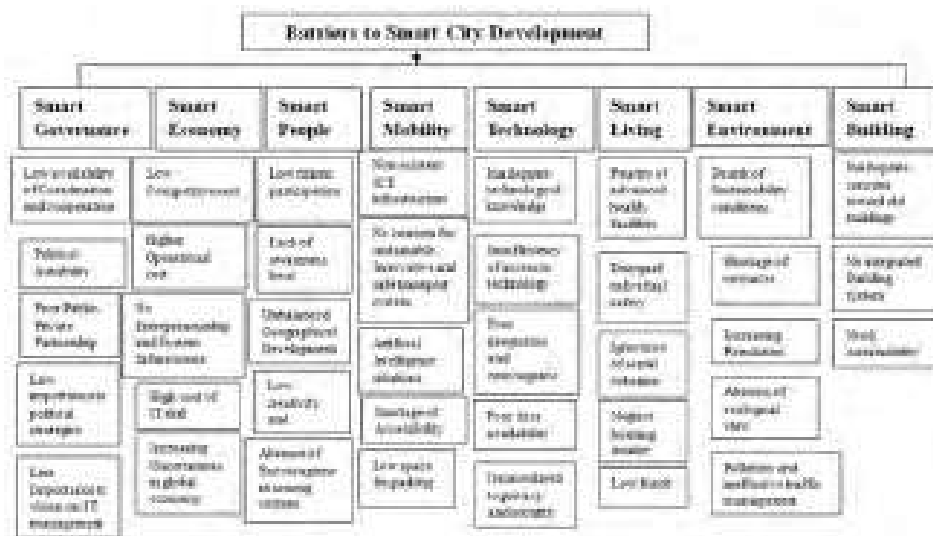


Figure 4: Conceptual Framework of Barriers to Smart City Development

Source: Prepared by the authors

Evaluation of Barriers in Smart City Development

Cities encounter obstacles in the development process. Thus, main barriers under eight smart city components to smart city development in Dharamshala studied in the present research paper have been elaborated as follows:

X1 Smart Governance Barriers

Smart governance deals with political strategies. Change of government and different governments at the Centre and state has caused the projects to suffer since successive governments have different ideas and priorities which have caused certain initiatives to be withdrawn or changed in scope. According to the experts, some projects are affected because of inter-departmental controversies. Projects are under the PPP mode and there is a need to keep check on private contractors. Government employees and bureaucrats involved in the projects get transferred and till the time new join in and get a hang of the projects, the work is on completion by the private contractors. (Table 1). According to the elected representatives, consultants hired for the smart city project are not well

equipped with the relevant knowledge and are merely replicating works of other cities without keeping a check on their relevance in the city.

X2 Smart Economy Barriers

Smart economy is useful to attain efficiency in the production and income generation (Dameri, 2013). Tourism forms the backbone of Dharamshala's economy; thus, government works for constructing new avenues and facilities for attracting tourists. The projects are impacted by low operational and maintenance cost. The age-old infrastructure of Dharamshala will incur more cost on its renovation than the formation of new urban infrastructure (Table 1). During the monsoons of 2023, it was observed that the buildings collapsed, footpaths, retaining walls for road widening, and roads at many places were damaged due to torrential rains further adding financial burden on the government. It has been advocated by one-fourth respondents that the entrepreneurship in the city needs to be improved for enhancing employment opportunities for youth. There is a need to improve system failure problems and enhance entrepreneurship which is given top most priority by one-third respondents. Experts perceived that training should be imparted and technical professionals should be employed for increasing competitiveness. The experts involved are not well versed with the concept and are replicating projects of one city to another.

X3 Smart People Barriers

Citizens are the primary beneficiaries of the facilities and should be encouraged to participate in the project implementation. About half of the respondents in Dharamshala were of the view that the citizens were not involved in smart city projects implementation. Citizens lack awareness about the projects and for them smart city is merely a city where all the basic facilities are provided with or without technological integration (Table 1). Dharamshala should be developed keeping in view of its geographical conditions, as over construction without knowing the geological strata may lead to sinking of the city as a whole. Geographically, the town of Dharamshala is split into Lower and Upper Dharamshala. McLeodganj and Forsythganj are located in Upper Dharamshala and commercial base is located in Lower Dharamshala. More than one-third respondents considered low citizen participation as the main barrier because the problems people face such as water supply, sewerage issue, cleanliness and housing quality are not solved while projects such as construction of inclusive streets, road widening is given priority. Sewerage treatment plants and sludge faecal management system is under construction in the city but still basic problems faced by the general public, are not worked upon. There is a lack of creativity, innovation and flexibility among the experts leading to slowing the process of projects and their implications without research and development.

Table 1: Criteria weights of Smart City Component Barriers to Smart City Development

Smart Governance (X1)		Smart Economy (X2)		Smart People (X3)		Smart Mobility (X4)	
Barriers	Weight	Barriers	Weight	Barriers	Weight	Barriers	Weight
Low availability of coordination and cooperation between departments	0.26	Low Competitiveness	0.276	Low Priority to Citizen Participation	0.347	Non-existent ICT Infrastructure	0.352
Unstable political system	0.054	Higher cost of project implementation and maintenance	0.054	Lack of awareness level	0.054	No concern for sustainable, innovative and safe transport systems	0.055
Lack proper Public Private Partnership	0.34	No Entrepreneurship and system failure issues	0.037	Unbalanced geographical development	0.266	Deficiency of Artificial intelligence solutions	0.181
Low importance to political strategies	0.146	Higher Cost of IT skill development and training	0.107	Low creativity and flexibility	0.107	Shortage of accessibility	0.276
Less importance to vision on IT management	0.21	Increasing Uncertainties in global economy	0.219	Absence of encouragement among citizens	0.219	Low space for parking facility	0.132

Source: Based on Calculations of Field Survey (2022-23) using AHP methodology as shown in figure 2.

X4 Smart Mobility Barriers

Smart mobility is provision of real time information regarding the availability of public transport, parking lots ensuring safe and sustainable transportation facilities. Smart mobility component has not been well developed in Dharamshala. One-fourth of experts' prime focus lies on the provision of real time information relating to the parking slots available in the city for example, display boards installed near Himachal Pradesh Secretariat, Shimla. The main barrier is non-integration of mobility infrastructure with information and communication technology to ease the problem of traffic congestion and parking (Table 2). Artificial intelligence solutions can be used for providing information and surveillance and monitoring of traffic flow. Parking slots are under construction or completed at various locations such as in McLeodganj and near Secretariat ward in Dharamshala, but still accommodating increasing vehicles is a challenge for the authorities. E-buses and e-cars are being piloted for improving efficiency for which twenty charging stations are under construction in Dharamshala, with space for maintenance, battery, dormitory for administrative staff and twenty bays for infrastructure maintenance. According to half of the respondents' inclusive streets are being developed with provision of utility ducts for water supply and laying

electricity wires in the streets of Dharamshala and use of paver blocks to improve aesthetics of the area (Sambher and Sharma, 2023).

X5 Smart Technology Barriers

Cities integrated with information and communication technology are known as “Smart Cities”. Planners are not well-versed with technical expertise, and citizens do not have an easy access to the technology (Table 2). Variable message system boards are installed at various places such as in Kotwali Bazaar (Ward number 6) in Dharamshala for offering residents’ digital experience of real time information regarding parking slots. An integrated command and convention centre is set up in Dharamshala city at *Kachahari Adda* for responding to the events in real time with the help of a decision support system. It serves as a platform for managing disasters, enhancing situational awareness by placing sensors across the city, and utilising collected data for government and community purpose but not implemented practically. Additionally, the centre will improve cooperation and coordination between different government agencies and urban municipal bodies, both inside and outside them in the later phase. The city is installing smart street lights with new energy-saving smart feeder panels that can be controlled remotely or centrally over a WI-FI network to switch off one-third and two-third and even all street lights. Smart technology is a platform for handling disaster management, increasing situational awareness by deploying sensors across the city and using data for civic and official purpose.

Table 2: Criteria Weights of Smart City Component Barriers to Smart City Development

Smart Technologies (X5)		Smart Living (X6)		Smart Environment (X7)		Smart Buildings (X9)	
Barriers	Weight	Barriers	Weight	Barriers	Weight	Barriers	Weight
Inadequate technological knowledge	0.291	Paucity of proper advanced health facilities	0.27	Dearth of sustainable resource management	0.269	Inadequate concern towards old buildings	0.68
Lack of access to technology	0.076	Disregard individual safety	0.062	Shortage of resources like supply of fresh water	0.073	No integrated building management system	0.117
Poor integration and convergence of IT networks	0.275	Ignorance of Social Cohesion	0.338	Rapidly increasing population could be a concern	0.339	Need sustainability in buildings	0.201
Lack of availability of data	0.078	Housing quality is neglected	0.094	Absence of ecological view	0.114	-	-
Issues relating to privacy and security	0.275	Low funding for education and tourism facilities	0.22	Pollution and ineffective traffic management	0.235	-	-

Source: Based on Calculations of Field Survey (2022-23) using AHP methodology as shown in Figure 3.

X6 Smart Living Barriers

Smart Living component comprises educational and health facilities and safety of the citizens. Dharamshala is considered as the safest city, but people do face problems of animal menace such as stray dogs. Due to negligence and lack of awareness in the allotment of tenders especially in PPP mode, it has led to the provision of poor facilities such as smart streets constructed by laying interlocking paver stones having low durability as shown in Table 2. In few wards, there is a need to work for proper cleaning and channelisation of runnels so that water especially during rainy season drains through them. The main barrier faced by the officials is the illegal construction which needs to be checked for further development of the city. For beautification, there is a provision of laying electricity wires underground. Thus, experts are covering each and every aspect of smart living while working on the provision of all facilities. Health facilities are available in Dharamshala city; with one Zonal hospital near Kotwali bazaar ward and it has easy accessibility. A few wards, namely Sakoh, do not have a primary health centre, and people have to visit the nearby hospital or dispensary. Work is being done to open up a dispensary in each ward. The officials are concerned about the housing quality and are working for the provision of better sanitation facility by cleaning drains and streets from time-to-time. Faecal sludge management treatment plant with 15 KLD capacity is being developed that will provide septic tanks to about 1,000 households in wards numbering one to eleven.

In the context of educational facilities, smart city projects have been providing funds for developing smart classrooms in various government primary and senior secondary schools. This will help students to learn and memorise and will have easy hands-on technology. Eco-tourism parks are constructed at various places viz. one opposite St. Andrew's Church that will help the Municipal Corporation to earn and enhance tourism facilities. There is development of modular toilets at three locations in the city under state-of-art modern technology, with water saving facility, having inclusivity and accessibility in line the Swachh Bharat mission.

X7 Smart Environment Barriers

Dharamshala is facing problems such as water supply, traffic congestion, parking issues and lack of ambulance road. It is apparent that Dharamshala smart city is surpassing its carrying capacity in terms of load imposed on resource utilisation; this has been corroborated with opinions expressed by more than one-fourth respondents. Concept of sustainable development cannot be ignored for solving these problems and there is a need for development of satellite town to decongest the main city centre and develop new environment-friendly facilities and recreational activities in the fringe areas (Table 2). From ecological perspective and closeness to nature, open gyms are constructed at various locations, but due to lack of space in many wards, these projects could not be implemented. A football ground is under construction in Dharamshala near HPCA stadium. Majority of the respondents were of the view that due to rapid

increase in population and heavy add on pressure of the tourists, availability of basic facilities such as provision of clean drinking water is main concern in Dharamshala.

X8 Smart Building Barriers

Technological integration of buildings, such as geo-tagging is the main focus of smart buildings component (Table 2). Development of new buildings, redevelopment and refurbishment of rain shelters, creation of distinct vendor zones such as in McLeodganj ward is prime focus. These buildings are constructed using prefabricated material, which gives them regularity and enhances area's aesthetic appeal. Building management system lacks integration (Table 2), but an integrated convention centre is built in Dharamshala to ensure that projects are carried out as intended. Thus, general development is undertaken, with innovation in particular and enhancing competitiveness to ensure sustainability in the construction of buildings.

Overall Ranking in Dharamshala Smart City

The main aim of smart city concept is to provide facilities to the citizens by efficient utilisation of resources, ensuring sustainable development and developing a peaceful society (Adali, 2022). Smart city is enabled with information and communication technology for enhancing quality of life of citizens by providing services and improving efficiency of urban infrastructure (Ekin, E. et al., 2022).

Table 3: Overall Ranking of Smart City Components in Dharamshala Smart City

S. No.	Smart City Components	Overall Barrier Composite Score					Average Criteria Value	Ranking
		(1)	(2)	(3)	(4)	(5)		
1	Smart Governance (X1)	0.26	0.054	0.34	0.146	0.21	0.202	3
2	Smart Economy (X2)	0.276	0.054	0.037	0.107	0.219	0.138	8
3	Smart People (X3)	0.347	0.054	0.266	0.107	0.219	0.198	6
4	Smart Mobility (X4)	0.352	0.055	0.181	0.276	0.132	0.1992	4
5	Smart Technology (X5)	0.291	0.076	0.275	0.078	0.275	0.199	4
6	Smart Living (X6)	0.27	0.062	0.338	0.094	0.22	0.1968	7
7	Smart Environment (X7)	0.269	0.073	0.339	0.114	0.235	0.206	2
8	Smart Buildings (X8)	0.68	0.117	0.201	NA	NA	0.332	1

Source: Based on calculations of field survey, 2022-23.

It is evident from Table 3 that in Dharamshala smart city, among eight key categories of smart city development based on key barriers, smart buildings ranked first. This is mainly due to non-integration of technology with urban infrastructure and lack of proposal for renovation of old infrastructure. This has been followed by smart environment because all developmental works need to be undertaken keeping in

mind sustainability. Smart governance has acted as a barrier due to poor coordination among departments and lack of vision and innovation mainly due to political instability that turned the situation merely within duration of two years. There is a need for eradicating interferences in developmental projects under smart city and work towards making city smarter without neglecting geographical diversification and problems associated with it.

The major findings inferred from the study are that the barriers pertaining to Dharamshala smart city may not be same for other Smart Cities of India, and are selected based upon experts' feedback. Main problems faced by the cities are traffic congestion, deforestation, water supply, rapid concretisation, poor sewerage facility and sanitation in general. Area based proposal and redevelopment is promoted in the wards namely Bhagsunag, Mcleodganj, Kashmir House, Kotwali Bazar and Ramnagar wards of Dharamshala smart city.

- Smart City is a buzz word and no work is being done, apart from rapid construction of urban infrastructure and conversion of cities into a concrete jungle, without making use of information and communication technology.
- Experts perceived that training should be imparted and technical professionals should be employed for increasing competitiveness. The experts involved are not well versed with the concept and are replicating projects of one city to another.
- Due to negligence and unawareness in the allotment of tenders especially in public private partnership mode, it has led to provision of poor facilities such as smart streets constructed by laying interlocking paver stones having low durability. There is a lack of creativity, innovation and flexibility among the experts leading to slowing the process of projects and their implications without research and development.
- Redevelopment project work of McLeodganj ward is being undertaken in a planned manner with mixed planning at designated areas in the form of cultural quarters with division into areas such as vendor shops in market sector.
- There is non-integration of technology with urban infrastructure and lack of proposal for renovation of old and aged infrastructure. Organisation of massive citizen engagement campaign to involve residents in the envision and realistic plan formulation for making Smart City proposal for Dharamshala is possible and can be considered as a positive move for overcoming these barriers to smart city development.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest.

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Contextualising Sustainable Development Through Rurbanisation: A Study of Rural-Urban Continuum in Odisha

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Abstract

India's developmental trajectory is a paradox, marked by a growing economic prosperity on one hand and glaring inequality, on the other. The predominance of a rural-agrarian economy saw overwhelming focus on rural development and agricultural growth to ensure food security and social stability since the time of India's independence. Successive governments at the central level realised that the fundamentals of economy depend on the progress and upliftment of the rural areas and hence focused on the countryside. However, as times changed and with the advent of economic reforms in the early 1990s, the political economy of India underwent a paradigm shift. Expanding economic opportunities and avenues of employment attracted skilled, semi-skilled as well as unskilled workforce into the urban areas and these migratory movements redefined the contours of human settlements and spawned unique challenges associated with them.

Recognising the importance of Rural-Urban Continuum and holistic developmental model, Shyama Prasad Mukherjee Rurban Mission (SPMRM) was launched in February 2016 to address rurbanisation and its importance in the context of sustainable development. The study examines policy imperatives as well as governance initiatives to expedite the process of bridging the gap between rural and urban. This study also seeks to explore the trend of rurbanisation in Odisha and examine whether it is in sync with the goals of sustainable development and regional policy.

Keywords

Sustainable Development, Rurbanisation, In-Situ Urbanisation, Inclusive growth, Political Economy, Decentralisation, Democratisation, Regional equilibrium.

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Introduction

The noted Sociologist Talcott Parson (1949), for the first time introduced the concept of “*rurbanisation*” in his classic *‘Essays in Sociological Theory’*. Rurban communities are the rural geographic habitations where the standard of living and modes of livelihood have changed so much that they mirror those of their urban counterparts (Parson, 1949). Rurbanisation here refers to situating urbanisation in the larger context of sustainable development and arresting the gulf between rural and urban spaces in the form of creating livelihood opportunities, robust infrastructure, holistic development and improving human development indicators.

The rationale behind studying the rural-urban integrations and patterns of interactions is not something that has remained oblivious to policy chambers or academic circles. However, there remains an absence of a comprehensive policy mechanism to fortify this concept and incorporate its nuances in the making of social and economic policies for development. World Bank Group in its report had opined that ignoring “*rurbanisation*” leads to economic inefficiencies and social inequity. (Akkoyunlu, 2015). Organisation for Economic Cooperation and Development called for an approach that is based on the concept of rural-urban partnership and integrated modes of development that imparts a multiplier effect on various sectors of the economy (OECD, 2013). The significance of Rural-Urban Linkages for poverty alleviation has often been underlined by various organisations (Global Monitoring Report, 2013).

Holistic rural development is central to achieving the 2030 Agenda for Sustainable Development (UNDP, 2015). In the policy parlance, rural development should assume greater importance and occupy the centrestage of developmental discourse (UNDESA, 2021).

In-situ urbanisation—a trend – a trend of rural development experienced in countries like China, Japan and Sri Lanka exhibits a unique pattern wherein the transformation of a rural landscape into an urban geography has taken place without migration of populations or conversion of agricultural lands into non-agricultural ones. Deloitte, a British multinational professional services in one of their articles titled, ‘The promise of smart rural communities: unlockinng new economic value,’ envisages a smart rural community that aims at alleviating poverty and inequality and building social capital, ensconcing rural development within the realm of sustainability and revisiting rural governance for the 21st century by redrawing existing strategies and practices in tune with sustainable development goals (Neal et al., 2019).

Fostering partnership between rural and urban actors and areas at the regional level are critical for a transformative agenda. Global collaborations for a holistic, territorial development are pivotal for graduating towards more sustainable and resilient societies. Through shared principles, these transformations could be better aligned with various sustainability indicators (UN Habitat, 2022). In terms of the sustainability and New Urban Agenda, UN Members states agreed to policies that support integrated urban

and territorial planning and development. They called for new and inclusive approach and enhanced synergies between rural and urban communities and spaces – an essential component of the vision of Agenda 2030 to leave no one behind. (UN Habitat, 2022). As we discuss the significance and dynamics of rural-urban integrations, it is essential to draw a conceptual parallel with Smart Cities Mission, launched in the year 2015 which aims to build sustainable and inclusive cities to transform urban regions into major hubs, contributing both to the economic growth and ensuring decent quality of life to the citizens, thereby promoting ease of living. This entails developing ‘smart’ solutions to respond to the complex challenges of urbanisation and deploy robust mechanisms and technological tools to harness the productive potential of Indian cities with the optimum and judicious utilisation of available resources (Ministry of Housing and Urban Affairs, Government of India). Drawing from this approach, rurbanisation attempts to re-imagine and refurbish the rural landscape of India to make it more liveable, sustainable, futuristic and citizen-centric.

Rurbanisation in Indian Scenario

There are stark inequalities in distribution of income, consumption, quality of life, technological diffusion and socio-economic development between rural and urban India. A gamut of plans and policies announced by the government over the years have aimed at bridging this gap. This rural-urban dichotomy continues to act as a drag on balanced regional and national development and impedes India’s march towards attaining the goals of Sustainable Development by the year 2030. While the causes of this rural-urban divide could be many, it is generally accepted by policy planners and academicians that there should be a dynamic synergy between rural and urban India as they are interdependent on each other. Since 1990s, the GDP of agricultural sector which forms the nucleus of livelihood in rural India has been steadily decelerating and stands at 14 per cent, whereas the corresponding share of the tertiary sector, primarily based out of urban settings has risen to almost 60 per cent. Despite this sharp divide, cities and villages coexist and are economically and socially intertwined with each other (Gupta, 2015). Various avenues for economic progress in the rural areas have created job opportunities and provided livelihood for the rural youth, including women.

Stronger rural-urban ties could play a catalytic role in socio-economic progress or poverty alleviation in the developing world. Rural-Urban Linkages are critical enablers of socio-economic development. A village life is the focal point for inclusive growth and social justice. Economic, environmental and social dimensions are enmeshed in a symbiotic relationship between the rural society and the urban settings. A virtuous cycle of rurban growth model would result in income-diversification, bridging the geographical gulf and simultaneously strengthen and intensify rural-urban interconnections to ensure food and nutritional security, generate livelihood opportunities, lowering poverty and malnutrition, bettering social indicators like access to quality education and affordable healthcare, transition to renewable energy, protection of local environment and increase

access to social infrastructure in villages. Thus, this approach rests on a premise of shift from hierarchy to network (Dhanai & Negi, 2015). While aiming at these objectives to be addressed, the study attempts to explore ways and means to curb digital divide between the rural and urban areas thereby emphasising on horizontal expansion of technology as a catalyst. Penetration of technology aided tools of e-governance is considered as a time tested and transformative measure across the globe to achieve the aforementioned objectives of good governance and sustainable development. The purpose of good governance encompasses a wide range of objectives, which include ensuring social development with just and equitable sharing of resources and opportunities to maintain peace and harmony, both at the levels of the natural environment and social sphere of human existence (Dhal, 2022).

Shyama Prasad Mukherjee Rurban Mission (SPMRM) as a Policy Response

Although the idea has gained momentum in the policy parlance in recent times, the idea of rural-urban integration in India is not new. Conceptualised by former President Dr. APJ Abdul Kalam in the year 2003 as Provision of Urban Like Amenities in Rural Areas (PURA) could be considered as a philosophical precursor to Shyama Prasad Mukherjee Rurban Mission (SPMRM) (*The Hindu*, 2010).

SPMRM launched on 21st February 2016 by the Union Ministry of Rural Development provides a policy framework to the changing characteristics of rural India and the shift in its economic profile. It envisages to develop a conglomeration of villages that are geographically proximate, having local productive advantages and exhibit an increasing trend towards non-farm and off-farm activities. Through this process, SPMRM aims to accelerate economic growth with an emphasis on poverty reduction and mitigating unemployment in the countryside and ensure provision of basic services like social goods and create model rurban villages with a focus on equity and inclusiveness. However, the mission treads a cautious path; i.e. by ensuring urban like facilities in villages, it seeks to retain the rural essence and the distinct cultural mores of the rural geographies – ‘*Aatma Gaaon ki Suvidha Shehr ki*’ (the soul of a village with town like amenities) [Ministry of Rural Development, Government of India].

The Rurban Mission attempts to go beyond the segmented and silos approach towards rural-urban governance and adopts a total approach to the process of rurbanisation which at present is at a nascent stage in India, yet holds tremendous potential to script a new narrative in the growth story of the country in future.

Objectives of the Rurban Mission

Decentralisation and greater democratisation through effective participation of masses and inclusion of all stakeholders can be identified as the ideological impetus driving

the mission. While identifying a probable rurban cluster, the State may locate a large village/gram panchayat that displays an urbanising character potentially leading to economic transformation in the region. The state government shall identify existing central and state government schemes relevant for the development of the cluster and ensure their implementation in a time bound manner. The state department of rural development or any department nominated by the state government will act as the nodal agency for the purpose of the Rurban Mission which will consult the Panchayati Raj Institutions (PRIs) across all tiers with respect to activities to be undertaken in the clusters (Ministry of Rural Development, Government of India). The Mission should be adopted by the gram sabhas of all the participating gram panchayats through gram sabha and panchayat samiti resolutions. Since SPMRM is based on convergence of existing schemes, PRIs would play a significant role towards capacitating the elected representatives of panchayats for leadership roles to develop effective third tier of Government to deliver on core thematic areas of the Rurban Mission and achieve success broadly aligned with the achievement of SDGs. Panchayats being the local centres of power as well as primary units of administration at grassroots are better placed to identify the priorities of specific clusters and act as a channel for facilitating demand generation and mobilisation of masses in the villages (Figure 1). This would progressively ensure empowerment of citizens and simultaneously strengthen the vibrancy of local democracy leading to institutionalisation of political processes and political socialisation (Jayal et al., 2006).

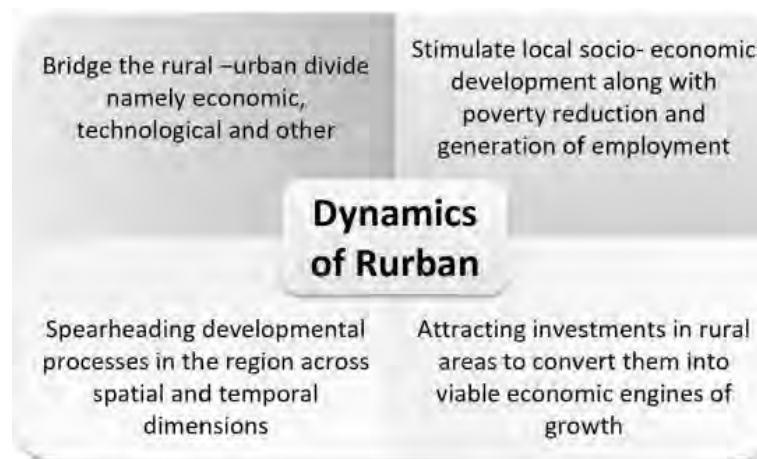


Figure 1: Objectives of Rurbanisation Project.

SPMRM aims to develop 300 select rurban clusters (109 tribal and 191 non-tribal) across India. It has 21 desirable components like equipping citizens with vocational competencies and economic incentives, agricultural processing, storage and warehousing (forward and backward linkages, upgrading school/higher educational facilities, techniques of waste management, inter-village road connectivity, mobile

health units, provision of sanitation, digital literacy, piped water supply, etc). most of which align with various Sustainable Development Goals, the most important being SDG 10, i.e. reduced inequalities. The Mission also recognises the differential needs of tribal and non-tribal settlements and coastal/hilly areas and accords priorities accordingly. It does not have the provision for separate allocation of funds for these programmes but is based on convergence approach, i.e, strategic selection and implementation of various existing central sector and centrally—sponsored schemes thereby promoting the culture of inter-ministerial coordination and inter-sectoral collaborations.

While selecting the Rurban cluster, the State can identify a large village located near the national highway or a block headquarters near a university campus, a gram panchayat that can prove to be a potential growth centre while harnessing the local resources available in the area. Furthermore the government agencies of the region need to identify the clusters based on socio-economic indicators and ethnographic profiles of the tribal and non-tribal regions and need to coordinate with the NGOs to get credible data to assist the government agencies in formulating policies with regard to the tribal communities living in the region. This, in turn can lead to the economic transformation of the region in general and accomplishment of the objective of fulfilling the aspirations of the people residing in that region.

Market accessibility and demands of the consumers are the other critical enabling requirements apart from the knowledge and information for increased productivity and enhanced quality of local produce by the villagers. Hence, there is a need for the creation of a technologically-enabled rural ecosystem where the vital stakeholders are digitally empowered to avail the opportunities being provided to them by the government, NGOs, market and the rural banks.

Methodological Framework for Identification of Rurban Cluster

Integrated Cluster Action Plan (ICAP) is a comprehensive strategy aimed at spearheading an inclusive and holistic developmental model following a detailed evaluation and review of the socio-economic and geographical aspects of a rurban cluster. A ‘rurban cluster’ is a group of villages located in close proximity and geographically contiguous with a population range of 25,000 to 50,000 in plains and coastal regions and 5000 to 15,000 in desert, hilly or tribal areas. The ICAP is prepared by the State Nodal Agencies in consultation with the technical departments as designated by the concerned ministry. It is a step-by-step policy action that involves the dimensions of spatial and temporal planning and meticulous choice of gram panchayats and large villages that demonstrate strong rurban potential and having the requisite resources to mobilise and usher in a unique developmental model. Please refer to Tables 1 and 2 for the detailed criteria of identification of non-tribal and tribal clusters.

Thus, to ensure the smooth functioning and obtain the desired outcome, a combination of methodology and strategy needs to be adopted, which includes empirical survey method, participant observation method, interaction, interviews and data analysis. In this process, all the above stated objectives should be integrated in a collaborative manner with proper coordination among the different institutions and organisations and plan for the strategic management of available resources both in the non-tribal and tribal regions that is essential for the success of the ambitious rural projects.

Table 1: Method of Identification of Non-Tribal Cluster

Actions to be undertaken by Union Ministry of Rural Development	Actions to be undertaken by the State
Separation of non-tribal and tribal districts	Identification of rural clusters in leading sub-districts.
Identification of top 50 sub-districts from the non-tribal districts of the state classification of top 50 sub-districts based on their potential trends towards ruralisation	Ranking of rural clusters based on: 1. Percentage growth in rural population 2. Surge in land values 3. Decadal increase in non-farm work force participation 4. Achievement in Swachh Bharat Mission (<i>Grameen</i>) 5. Female enrollment ratio in secondary schools 6. Innovative governance practices
Ranking of top 50 sub-districts to identify the potential sub-districts in a State	7. Robust local governance institutions and participatory democracy

Source: Integrated Cluster Action Plan (ICAP) Ministry of Rural Development Government of India, https://rurban.gov.in/assets/download/pdf/ICAP_book.pdf.

Table 2: Method of Identification of Tribal Clusters

Actions to be undertaken by Ministry of Rural Development	Actions to be undertaken by the State
Selection of leading tribal sub-districts by the Ministry	Decadal growth in tribal population
Percentage growth in tribal population	Growth in tribal literacy rate
Prevailing literacy rate among the tribal population	Percentage growth in non-farm work participation ratio
Presence of economic clusters in the district.	Patterns of economic activities discernible in the region

Source: Integrated Cluster Action Plan (ICAP) Ministry of Rural Development Government of India, https://rurban.gov.in/assets/download/pdf/ICAP_book.pdf.

Situating Rurbanisation in Odisha

Odisha, a state located on the east coast of India is blessed with an abundance of natural resources and pristine beauty. It is the ninth largest state in the country comprising 4.7 per cent of India's total geographical area and eleventh largest in terms of population with 40.19 million people living in the state as per census 2011. About 83 per cent of the population lives in rural areas whereas 17 per cent inhabit urban areas (Government of India, 2011). Although with the share of services and industry sectors rising in the economy, agriculture remains the key driver of economic activities of the state with a share of 20.4 per cent to the Gross Value Added (GVA) as per the *Odisha Economic Survey 2023-24* (Pradhan, 2024). Agriculture is also the largest employer in the state with more than 55 per cent of the population directly dependent on agriculture for livelihood (National Sample Survey, 2014).



Map 1: Administrative Map of Odisha.

Source: Survey of India. Date: 11.09.2024. https://onlinemaps.surveyofindia.gov.in/Digital_Product_Show.aspx.

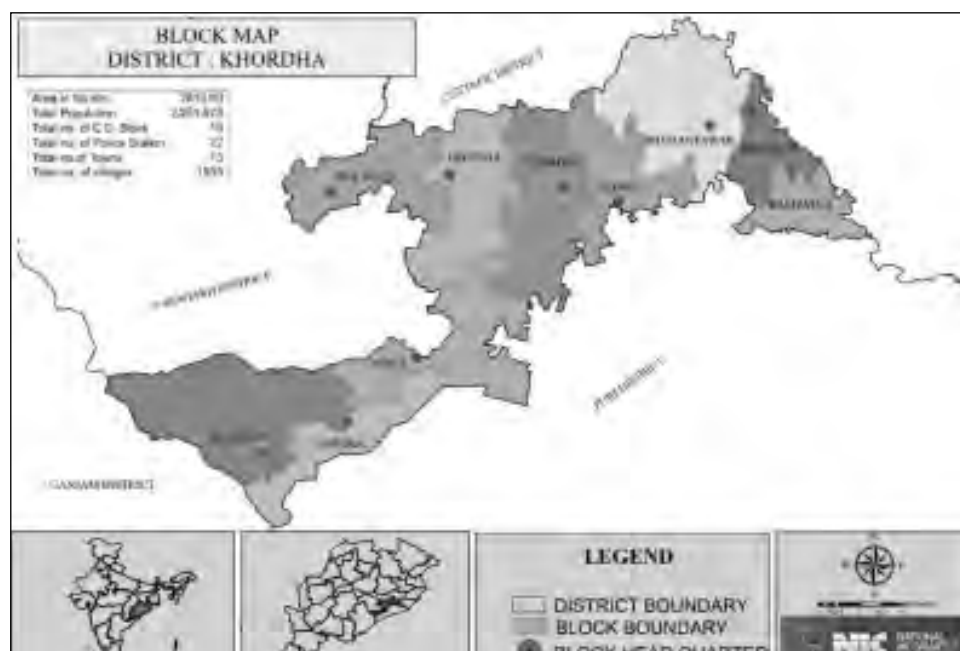
Although the bulk of the population is dependent on farming, due to lack of sectoral diversification within the agrarian economy, farmers are deprived of options other than conventional paddy cultivation and dependent on state for its procurement (Pradhan, 2024). Being a coastal state, Odisha is exposed to the vagaries of nature, especially the debilitating impact of climate change. Episodic occurrences of cyclones hitting

the coastline of Bay of Bengal, floods and torrential rains exacerbate the miseries of people inhabiting these fragile geographies. Frequent natural disasters often destroy their crops, personal properties including livestock. With meager savings and lack of economic opportunities, people are forced to migrate to distant territories in search of livelihood. The problem of distress migration, i.e. all migratory movements made in situations when the individuals and/or the households perceive that the only viable livelihood option to move out of poverty is to migrate (Food and Agriculture Organisation, 2024). Such kind of situation is particularly stark in the poverty-stricken districts of western and southern Odisha.

In terms of demography, Odisha has a large share of tribals accounting for about 22.7 per cent of its total population (Government of India, 2011). Out of the 112 Aspirational districts identified by NITI Aayog, 10 are located in Odisha (NITI Aayog, Government of India). Since SPMRM has an area specific approach towards tribal regions, development of model rurban villages incorporating the specific needs and priorities of the population of these areas could usher in an era of inclusive and sustainable development of a major chunk of Odisha's geography, erasing regional disparities and achieving regional equity and development for all.

Research Design

The given case study attempts to map out the patterns of rurbanisation and their impact on the SDGs with a particular emphasis on decentralised governance, participatory democracy and attainment of critical socio-economic indices of development. Out of the 30 districts of Odisha, 14 have identified rurban cluster (Rurban Mission, Government of India). This research has been focused upon a pilot study conducted in two rurban clusters, ie. Ranipada cluster of Khordha district which happens to be a Progressive district and Marichamal cluster of Koraput district which happens to be an Aspirational district. The primary objective of this study is to examine the trends of rural-urban continuum and the scope of rurbanisation in two Rurban Mission clusters, ie. Ranipada cluster under Banapur block of Khordha district and Marichamal cluster under Koraput block of Koraput district of Odisha. The given case study was carried out during December 2023 and January 2024 as a pilot study in which various stakeholders, ranging from Additional District Magistrate (ADM), Block Development Officers (BDOs) to PRI officials including Block Chairman, Panchayat Extension Officer (PEO), Assistant Executive Engineers (AEEs) of the blocks are in charge of supervising and completing the projects, Young Professionals (YPs) in charge of Rurban projects entrusted with geo-tagging the projects once they are declared complete and prepare a status report, were also interviewed. To ascertain the degree of people's participation, their role in decision making and their involvement in the Mission – right from project approvals to their completion in the Rurban Clusters, focused group discussions and interviews were held with the local villagers to make our study more engaging and meaningful.



Map 2: Khordha District, Odisha; Source: Odisha Geoportal Date: 11.09.2024

Sample District I: Ranipada Rurban Cluster, Khordha

Ranipada Rurban Cluster is amongst the 14 Rurban clusters selected from the state of Odisha under the SPMRM. It is located in the Banapur block of Khordha district, about 72 kilometres from the district headquarter town of Khordha (District Information of Khordha, Government of Odisha, 2024). This cluster comprises five Gram Panchayats (GPs) namely, Bheteswar, Bhabanipur, Narendrapur, Kumaranga Sasan and Tumuraput Sasan. The cluster is named after Ranipada, the largest village of the block. The boundaries of all these GPs are geographically contiguous as is the norm under the National Rurban Mission.



Map 3: Banapur block where Ranipada Rurban cluster is located.



Map 4: Khordha which is the Located District Headquarters Town of Khordha.

Establishing the Rural-Urban Continuum

The Ranipada cluster comprising of 5 gram panchayats are contiguous to the Banapur Notified Area Council (NAC) which serves as the nearest urban centre for fulfilling the basic needs of the villages situated in the vicinity. It has a community health centre, primary and secondary schools, a large market for daily essentials, a bus stop, an auto stand and few internet cafés, etc. The block is located close to the border of Ganjam district (Refer to Map 3) and around 72 kilometres from the district headquarters town of Khordha (Refer to Map 4). So, the NAC of Banapur acts as the critical urban habitation that complements and caters to the developmental needs and aspirations of the Ranipada rural cluster. It is a rapidly growing region and has the potential to develop into a municipal township in future thereby spearheading ruralisation of the cluster at a greater pace.

To learn more about the technicalities of the projects, the authors had a word with a Young Professional (YP), previously associated with the Mission at Ranipada cluster. He briefed them that as per the provisions, a tribal cluster is entitled to Rs 15 crore for undertaking developmental projects in that cluster whereas for a non-tribal cluster, an amount of Rs 30 crore is earmarked for various rural projects. Ranipada being a non-tribal hamlet falls in the latter category. He also told that under the Rural Mission, 14 components are identified for different sectors like inter-village connectivity under which concrete roads are constructed. Likewise, there are provisions for education (smart classrooms in schools), drinking water (tap water supply to rural households) which cater to the different priority areas identified under the National Rural Mission. On being enquired whether the Gram Panchayats and Panchayat Samiti Members are consulted before finalising project in a given cluster, he said a Gram Panchayat Development Plan (GPDP) is formulated after consultation with the local governance institutions, ie. the PRIs.



Image 1: A Cemented Concrete (CC) Road constructed at Bheteswar Gram Panchayat in Ranipada Cluster.

The concerned YP also informed that the project for the Ranipada cluster was sanctioned in the Financial Year 2016-17 and that the continuation of the scheme, i.e. further approval of projects for a particular cluster depends solely on the progress incurred in the preceding period. In 2022 the Ministry of Rural Development, Government of India declared the project to be “Sunset”, i.e. no new schemes or programmes are to be launched under SPMRM in the entire country and only the projects which are already announced are to be completed within the stipulated time frame.

This study entailed interaction with the villagers of Bheteswar GP regarding the efficacy of the scheme being implemented in their village. An overwhelming majority of the villagers feigned ignorance about the Mission and admitted to have never heard of any such scheme before. This runs contrary to the claims of the YP that stakeholders are taken into confidence before the final GPDP takes shape. The only aspect that the people in Bheteswar could relate to is that they now have a cemented concrete road in their village connecting to a nearby temple and this small stretch guarantees an all-weather connectivity which is up to their level of satisfaction. The fact that a vast majority of the local population is oblivious to the objectives of the Rurban Mission and how it could potentially transform their lives defeats the very purpose of decentralised participatory governance, community engagement and diversifying representation which are key elements of deliberative democracy (Jain, 2005).

During one of the conversations with the *Sarpanch* of Bhateswar, the authors observed that the latter didn't wish to divulge the details of the work despite their repeated persuasions. Then they met the Chairman of Banapur Zilla Parishad Zone—who opined that although Ranipada cluster was selected under the Rurban Mission in as early as 2017, the then authorities including the Revenue Inspectors (RIs), *Tehsildars*, Joint Executive Engineers (JEEs) had no idea about the core mandate of the mission. For instance, they couldn't contemplate as to how a 'smart classroom' would look like if constructed in a school. They thought it was appropriate to construct roads and drains since they are less cumbersome to design, plan and implement as well as readily visible to public. He suggested that although the policy was very well intentioned and thematic in its approach, it suffered from a design bias and not much Information, Education, and Communication (IEC) tools were employed to disseminate about its modalities and contents to the implementing agencies or about its benefits to the primary stakeholders, i.e. the people inhabiting the cluster. This point was also concurred by the AEE of Banapur block who too felt that the project could have been much more effective had its various dimensions properly studied and explored in detail.



Map 5: Koraput District, Odisha.

Source: Odisha Geoportal, Date: 11.09.2024 (Survey of India).

One of the major components of the Rurban Mission is to ensure potable water supply to all rural households, central to SDG 6, i.e. Clean Water and Sanitation (UN

SDG, 2015). For drinking water projects to be installed under Rurban Mission, the state authority has designated Rural Water Supply and Sanitation (RWSS) under the Panchayati Raj and Drinking Water Department, Government of Odisha as its nodal agency. To examine the state of water supply projects being implemented, the authors met two Civil Engineers tasked with implementation of various government projects in the block. They demonstrated the entire model of water supply, right from the procurement of water from the intake well to its purification and supply through ‘Functional Household Tapwater Connections’ (FHTC). From the discussion, it was learnt that the status of potable water supply to households to Ranipada cluster under the Rurban Mission was satisfactory.

Sample District II: Marichamal Rurban Cluster, Koraput

Marichamal Rurban Cluster is located in Semliguda Panchayat under Koraput block of Koraput district. It is located around 25 kilometres from the district headquarter town of Koraput. Koraput is one of the ten Aspirational Districts identified by NITI Aayog and the Marichamal cluster is a tribal hamlet. Damanjodi, an important industrial township of the district home to the public sector undertaking, National Aluminium Company (NALCO) is located just three kilometres away. Damanjodi is a planned township and is easily accessible to Marichamal village (District Information of Koraput, Government of Odisha, 2024). The rurban cluster comprises a compact settlement and unlike Ranipada, not a cluster of villages amalgamated together—mainly due to hilly terrain and sparse population.



Map 6: Semliguda panchayat of Koraput block. Marichamal cluster is located near Semliguda.



Map 7: Koraput which is the district headquarters town of Koraput district.

Establishing the Rural-Urban Continuum

The Marichamal Rurban Cluster is located in Koraput block of Koraput district near Semliguda panchayat (Refer to Map 6). It is located at a distance of around 30 kilometres

from the district headquarters town of Koraput (Refer to Map 7). The nearest urban centre is Damanjodi NAC which is located at a distance of just 6 kilometres. It is a major industrial town of the district which houses the National Aluminium Company Limited (NALCO) which is a major public sector utility dedicated to mining and refining of metals and power generation as well. This planned township serves as the nucleus of rurbanisation for Marichamal as it caters to the diversified needs of the tribal cluster, from education and healthcare to commercial and employment avenues. The presence of a major PSU provides a geographical and economic advantage to the Marichamal cluster as it has the potential to grow into a thriving rurban cluster in the near future.

Observations from the Field Surveys



Image 2: A Signboard welcoming the visitors to Marichmal Rurban Cluster.

The ADM of Koraput and the BDO (Koraput block) provided the relevant details of Marichamal Rurban Cluster. To their utter surprise, the authors learnt that the project for Marichamal cluster which was inaugurated with a lot of fanfare was not sustainable

and has already been closed since 2021, i.e. declared sunset. Despite this, the officials have been entrusted with the task of overseeing the implementation of the already approved projects at the time of inception and waiting for their completion.

During the course of the field survey, the research team visited the Marichamal cluster to verify the claims and examine the current status of the cluster. A giant board mentioning ‘Marichamal Rurban Cluster’ was placed at the entrance of the village abutting the bus stop on the main road connecting Damanjodi with Koraput. However upon enquiring, a shopkeeper told the authors that the signboard exists just for the name sake and no substantial work has been done for the village under the Mission. It was shocking to learn that the village was bereft of even a gram panchayat office which was still under construction. Even the elected *Sarpanch* too didn’t reside in the village. In the absence of a functioning panchayat office and the non-availability of the elected *Sarpanch*, the fate of local democracy, decision making, democratic participation of people and their aspirations could very well be imagined.

The majority of the population, just like in Ranipada was unaware as to what exactly was the Rurbanisation policy all about. To ascertain the actual status of the cluster, the local PEO was contacted who also expressed his inability to share the reports citing personal engagements. The authors then happened to encounter a group of villagers, comprising youths, middle aged men and women who were quite observant and vocal about their rights. They all had a long list of grievances against the government officials whom they felt had not addressed the aspirations and priorities of the residents. They told that except for a road and a shopping complex comprising few shops. set up at the entrance of the village, nothing else has been covered under the Rurban Mission. Even the constructed shops had not been rented out to the youths for generation of employment activities and livelihood opportunities which happens to be a core objective of rurbanisation. They also alleged that there prevails rampant corruption in the area and complained that they are being asked to pay bribes to the tune of Rs. 5000 if they wish to own those shops. They also lamented that a lot of funds meant for SPMRM to be spent in the cluster has been misappropriated and pointed towards a nexus between local administration and higher authorities.

A woman heading the local Self-Help Group (SHG) alleged that a ‘Mission Shakti’ (name of a scheme under which SHGs operate in Odisha) building in the village was being depicted as a project executed under the Rurban Mission. However, that was constructed by the concerned department and not under the mission. She lamented that it is being showcased that the policy is a great success by portraying a rosy picture of the same but the ground reality is far from satisfactory. Prima facie, it could be inferred that the mission has not realised its desired objectives and has failed to live upto the expectations of the locals because of its tardy implementation, apathy of local administration, lack of transparency stemming from allegations of corruption and misappropriation of funds meant for welfare of the masses. There exists a gulf between

the administration of Marichamal and the citizens representing a significant trust deficit and social capital—essential to accomplish any policy goal in its true manifestation.

Mapping The Sustainability Quotient in Ranipada and Marichmal Clusters

Like many other government policies, National Rurban Mission too is closely aligned with the framework of sustainable development. Both Ranipada and Marichmal clusters have several developmental projects taken up under the Rurban Mission that overlap with various Sustainable Development Goals (SDGs). Ranipada for instance has focused on boosting rural connectivity by constructing cemented concrete roads and fostering digitalisation through Common Service Centres (CSCs) that are directly linked to SDG 9, i.e. resilient infrastructure and innovation (UN SDG, 2015). Institutional deliveries, decline in child marriage and higher enrollment of girl children in primary schools as reported by Narendrapur gram panchayat, fulfills the targets under SDG goals 3 and 5 good health and well being and gender equality respectively. The piped drinking water projects promise safe potable water to the countryside – ensures clean water and sanitation under SDG 6. However, lack of adequate infrastructure in local Anganwadi centres (SDG 4 Quality Education) and lack of employment generation (SDG 8 – Economic Growth and Productive Employment for all) remain a challenge. Another underperforming sector is the penetration of renewable energy sources (SDG 7 Affordable and Clean Energy) given the fact that Odisha being a tropical state is blessed with abundant insolation (*The New Indian Express*, 2024) throughout the year and the vast coastline offering the scope for developing wind mills too (*Times of India*, 2024).

Marichmal cluster has been able to provide some insights into the intent and object of rurban yet the design and implementation of projects have encountered several challenges, logistical and administrative. Apart from select road paving work, nothing substantial pertaining to Rurban Mission has been done. The remote, tribal hamlet suffers from critical gaps pertaining to functional schools (secondary and higher secondary) and colleges thereby limiting the impact of SDG 4. Lack of household toilets (SDG 6) and the resultant burden on women folk for fetching water or relieving outside has a huge negative externality on their agency which besets SDG 5 (Gender Equality). Lack of employment opportunities and innovative ventures (SDG 8 and 9) have affected their socio-economic prospects. Overall, the scheme needs to revamp and redeem itself in the given cluster in order to attain its full transformative potential, improving the lives of the cluster as well as fulfilling the commitments of SDG.

Furthermore, the survey revealed that both Ranipada and Marichmal lack one of the central pivots of Rurban Mission, that is: democratic decentralisation and effective participation of the masses in the decision- making process (SDG 16 – Peace, Justice and Strong Institutions). Enabling people's participation is *sine qua non* in a democratic polity and for any genuine public policy intervention to succeed, the voice of the

citizens, the primary stakeholders in the policy process has to be heard and taken into account. After all, one of the 5 Ps of Sustainability is People (Planet, Prosperity, Peace and Partnership being the other four).

Challenges

The team, during the course of its extensive visits to the above mentioned rural clusters encountered several challenges which it would wish to discuss. Few of the challenges that hinder the successful implementation of the scheme are:

- Lack of involvement of masses and critical stakeholders in the decision-making process, including the selection and approval of projects meant for their socio-economic upliftment and welfare.
- Lack of clarity and understanding on the part of local administration about the dynamics of the rural policy and the nature of works to be implemented under the mission in a given cluster. This leads to a casual and generic approach towards a progressive scheme aimed at holistic transformation of rural lives and socio-economic landscape.
- Virtual absence of the third tier of governance, i.e. the Panchayati Raj Institutions (PRIs) in the selection and approval of rural projects. This defeats one of the core objectives of the National Rural Mission – empowerment of the local governance institutions in strengthening grassroots democracy and foster participation of masses.
- Non-involvement of civil society organisations and other public spirited individuals of the region engaged in social work in the decision-making apparatus. This has resulted in a trust deficit between the administrative agencies and the citizens because of a lack of effective channel of communication, perceived opaqueness of the scheme and haphazard implementation of developmental projects.
- Absence of robust mechanisms of coordination, implementation, monitoring and evaluation of scheme at various levels. The conventional top down model has failed to represent the diversity of the geographical settings and the aspirations of the masses. Also, the lack of clarity and comprehension of the actual mandate of the policy has resulted in goal confusion and ineffective implementation of the scheme on ground.

Way Forward

New trends in technology, representative institutions, and participatory processes transform the political and social ecosystem at all levels, thereby redefining the way citizens and governments engage with each other. Democratisation and participation is one of the critical pivots of citizen-centric governance. In the context of a globalising world, there is an urgent need to understand the importance of urban governance in the changing environment and strengthen the substantive aspects of Rural Mission

in order to realise its true potential. The cherished objective is to establish an ideal and robust model of rural development that is equitable, just, inclusive and sustainable through the following measures like :

- Involvement of widest possible range of stakeholders, right from the project formulation till its implementation and evaluation. Successful public policies aimed at social welfare, economic transformation and political empowerment depends entirely on enlisting the active support and popular consent of the citizens because it is the citizens who would be the ultimate beneficiaries of any policy intervention.
- Prevalence of corruption, nepotism and favoritism act as a drag on successful implementation of public policies which results in erosion of trust in the process of governance of the ordinary citizens. Therefore, maintaining transparency and accountability of the people involved in the process from the local representatives to the higher administrative officers and agencies is essential for the efficient, effective and time bound implementation of projects.
- Mechanisms for coordination and consultation with different departments and agencies within the government and outside must be explored to realise the thematic aspects of the scheme and enrich its substantive content. Domain experts working in sectors like rural development, water management, agri-business, renewable energy, healthcare, education, skilling and vocation must be engaged for understanding the actual needs and priorities of specific rural clusters and design tailor-made, customised projects in sync with the local geography, demography and economic milieu.
- Civil Society is an indispensable actor in advocating, articulating and arbitrating between the state, market and the citizenry. Participation of social activists, local NGOs and other voluntary organisations enhance the credibility of the decision-making process. NGOs and local activists have their eyes and ears on the ground and possess first - hand information about the dynamics of the region. They enjoy the support and goodwill of the local population and hence the state is less likely to face resistance while implementing policies.
- Different policy environments warrant different kinds of intervention. Instead of the conventional *one size fits all* approach, each cluster or hamlet must be allowed to identify its own set of priorities and requirements and proceed with developing projects accordingly. This ensures minimal wastage of state exchequer, optimum utilisation of available local resources and vision translating into action accruing benefit to the masses.

Thus, gradually bridging the rural-urban divide through various policy initiatives at the grassroots level will not only address the pertinent issue of forced migration due to lack of job opportunities but will also address the issue of lopsided development and rural distress in general. It is assumed that the goal of sustainable development will address

both the environmental concerns and the growing economic needs of the people, which in the foreseeable future will ensure seamless progress and eventually bridge the gap between rural and urban regions. The focus of governance, therefore needs to align citizen's participation with policy frameworks that are environment-friendly and which complement sustainable development. This in turn, will not only supplement the efforts towards achieving the goals of Viksit Bharat but will also comply with the SDGs of the United Nations.

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Strengthening Rural – Urban linkages for Inclusive Development: A study in India

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Abstract

Migration of people from villages to cities is a common phenomenon. Over a period of time, this migration led to rapid growth of urban population. In India, urban population with its urban way of living led to increased consumption of processed foods. Since the food production is from rural areas, there is a clear dependence of urban people over the rural products. Rapid urbanisation demands more diversified food production. Rural-Urban Linkages (R&U) in this context can benefit the people living in both the countryside and town areas as they play a crucial role in income and employment generation in the country. However, till date there is no comprehensive policy to strengthen R&U linkages in the country. This study focusses on increasing scope for Rural-Urban Linkages and thereby contribute to inclusive growth of India.

Keywords

Migration, Urbanisation, Rural – Urban linkages, Rural – Urban Continuum, Livelihoods.

Introduction

Development of every country is a combined contribution of its rural and urban areas. Neither exclusively rural nor urban sectors alone could ever contribute to the progress of a country. However, the percentage of contribution from both these sectors can vary depending upon the kind of connections between them. Strong and positive linkages between hinterlands and cities significantly enhance a country's overall development. Rural areas depend on urban centres for markets to sell their produce, access to information, and non-farm employment opportunities. In turn, urban areas play a crucial role in disseminating innovations and driving social and economic transformation in rural regions. These interdependencies foster mutual growth and contribute to improved livelihoods for households in both rural and urban areas. World Bank (2006) stated that ignoring R&U linkages leads to inefficiencies and causes growth inhibiting inequalities. An important part of industrial growth in most low-

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income countries can be attributed to formal and informal linkages with agriculture, i.e., processing and manufacturing of agricultural raw materials and other agricultural products (Akkoyunlu, 2015).

UN-Habitat Report (2021) presents a framework of action that emerged from collaboration between Global Land Tool Network (GLTN) and International Federation of surveyors in response to land problems that affect both rural and urban development equally. Climate change, land conflicts, food insecurity and environmental degradation are critical factors in people's movements from villages to town areas and vice versa. Around 80 International GLTN members, civil society organisations, research and training institutions, bilateral and multilateral organisations are working together to address urban and rural planning and development issues (Chigbu, 2021).

Significance of the Study

The present study attempts to explore opportunities and constraints of R&U linkages that contribute to inclusive development of a country. Proper study of socio-economic differences between rural-urban settings, and their interdependencies helps to prepare a roadmap for equitable growth of both regions within the country.

Review of Literature

Cecelia Tacoli et al explained in their report that inclusive urbanisation addresses the needs of diverse low-income groups, be they migrants or low-income residents remains elusive in many fast-growing cities of global south. Apart from urban poverty reduction programmes, provision of citizenship rights to all the migrants helps them in gaining access to basic requirements like food, clothing and shelter, thereby preventing deprivation (Tacoli, Granahan, & Satterthwaite, 2015).

Dutta and Chakrabarthy opined that rural-urban continuum is the basic determinant of rural–urban linkages. The authors discuss issues of labour migration from rural to rural and rural to urban areas. Authors focus on inclusive approach to development and also identified that consumption patterns of both rural and urban populations in India have been changing. According to their study in Assam state, encouragement given to food processing industries is the major reason behind strengthening rural, urban linkages (Dutta & Chakrabarthy, 2015).

Singh and Basu tried to explore the role of migration and commuting in addressing livelihood vulnerability along with rural-urban continuum in Karnataka state. At an intra-household level, migration and commuting alleviate vulnerability for some family members while increasing that of others. Authors identified that there are deep-seated social and psychological compulsions that drive migration (Singh & Basu, 2019).

Sietchiping and Kago focus on the rationale of renewed Rural–Urban Linkages. Limited land resources create intense competition for different uses including extreme urbanisation and industrialisation on the one hand and environmental protection over

the land on the other. The authors argue for effective interaction between both rural and urban areas using selected cases and learning interventions in rural-urban continuum from various organisations and for this, there is a need to strengthen partnerships, research and knowledge development (Sietchiping & Kago, 2015).

Zenou felt that urban job creation policies can backfire by increasing rather than decreasing urban unemployment. One way out is to have a policy that simultaneously increases urban unemployment and reduces rural-urban migration or both policies can be combined, and government could subsidise the expenditure not only in the city but also in the rural areas (Zenou, 2010).

According to Taguchi and Santini, rural and urban areas exist across a broad rural-urban continuum ranging from megacities, large regional centres to townships and rural hinterland. Urbanisation of rural areas is the main feature of rural transformation. However, local governments and stakeholders are to be empowered in order to improve their food system. Streamlined and coherent policies across local national and global levels are required to create an enabling environment for the development of sustainable food systems. The authors emphasise that we just have to change our mindsets for protection of environment we already live in (Taguchi & Santini, 2018).

Manisq opines that the conventional approach of dividing areas into rural and urban categories is inadequate for tackling issues of poverty, malnourishment, meagre or underrated education and health facilities, etc. The authors emphasised more on developing peri-urban areas that promote rural and urban linkages for sustainable development (Manisq, 2023).

Dhanai and Negi opine that so far, the importance of R&U linkage has not been recognised and has also been ignored in framing national, economic, and other policies. According to them, the infrastructural problems and other institutional constraints tend to discourage the interdependencies between cities and village areas, and this slows down the process of rural empowerment and economic development. As such strong R&U linkages do play a significant role in socio-economic development or poverty reduction in developing countries (Dhanai & Negi, 2015).

Prakash and Thirumaram viewed that rural development policies are aimed at slow migration but have achieved the reverse. Increased productivity results in rural labour redundancy and a better educated rural work force is always ambitious to seek employment in the city (Prakash & Thirumaran, 2015).

Davila focussed on how the Rural-Urban Linkages can operate in different contexts and how are they influenced by factors such as economic policies, political concerns, administrative measures and planning regulations. These linkages in turn effect the livelihoods of many people but particularly the poorer and less powerful groups within the society (Davila, 2002).

Research Objectives

The following research objectives help for systematic and analytical conduct of the study.

- (i) Understanding the concept of rural and urban dichotomy;
- (ii) Identifying the interlinkages or dependencies between rural and urban areas;
- (iii) Analysing the concepts of R & U continuum and migration;
- (iv) Government efforts to encourage rural-urban interlinkages; and
- (v) How the rural and urban linkages can be further enhanced for attaining inclusive development in India.

Methodology

The article is descriptive in nature and is based on secondary data collected from different authentic sources of information that include research books, journals and government websites.

Based on the above objectives the paper is presented in four parts:

Rural-urban differences and issues of migration; presence of rural and urban linkages and their implications; Government efforts in this context; and scope for further strengthening the linkages and Conclusion.

Rural and Urban Dichotomy

Rural and urban way of living continues to exist since times immemorial. Rural areas are those remote areas which are in vicinity or remotely located, with people having agriculture as their primary occupation. Whereas cities are inhabited with people having occupations other than agriculture. However, across the world, rural and urban co-exist along a continuum with multiple types of factors --- amenities, public and private capital, money flow and information. However, the percentage of people living in rural and urban areas differs in different countries depending upon the socio-economic and political factors that contribute to the growth of their respective localities.

Framework for understanding rural-urban differences and rural-urban linkages

- Includes both rural and non- rural population and linkages between them.
- Indicates that wherever people live and work---whether rural or urban, their surroundings influence their scale of deprivation.
- Recognises that there are typical 'urban' and 'rural' lifestyles that influence people's livelihoods, although one needs to be cautious at making generalisations as there are great diversities between different urban and rural locations.

Table 1: Differences between Livelihoods according to the Rural-Urban Continuum

Rural		Urban
People depend upon agriculture, cattle rearing, forestry, or fishing (i.e. dependence on natural resources) Livelihood is based on natural resources only. There is comparatively easy availability of land for housing. Rural areas and their local governing bodies are more distant from Central government. Access to infrastructure and other services is extremely limited (largely because of distance, low density, and low standard of living) Earning on agriculture is largely for self-reliance only and not for commercial purpose. Earnings from farming, etc. also depend upon favourable weather conditions. Some rural areas exhibit urban features for example, popular tourist areas, mining areas, areas with high yielding variety of crops, and areas strongly linked to cities.	Rural-urban interface	Livelihoods derived from labour markets within non-agricultural sector- production or making/ selling of goods or services. More dependence on place of production like a particular house or building as an economic resource (place for production) Land for housing is extremely expensive; land value within and outskirts of the city is extremely high due to commercialisation. Urban areas are more susceptible to misgovernance as there is scope for corporate interference. Access to infrastructure in urban areas is also difficult for low-income groups because of soaring prices, illegal nature of their homes (for many) and poor governance. In cities, non-agriculture-based employment provides earnings mostly in cash to meet basic needs like food, water, sanitation, employment, garbage disposal, etc. Rural characteristics are observed in urban location (urban agriculture, 'village' enclaves, urban forestry, terrace gardening) and so on.

Source: Tacoli, Cecilia and David Satterthwaite (2003).

Rural and Urban lifestyles in India

As per Economic Survey (2022-23), 65 per cent of Indian population resides in villages and 47 per cent depends upon agriculture for livelihoods. With limited number of people, in and around their surroundings, each one knows the other very well. They share common culture, customs, and traditions. They practice community living by celebrating common festivals together. However, these religious customs and practices

in Indian society vary depending upon their culture and lifestyle. Apart from this, access to healthy food and water, being away from pollution of the city makes the lives of villagers more peaceful.

Caste system stands as a pivot of rural social structure as the most powerful determinant of individual behaviour and social order in rural society. The *Jajmani* system rules the different social, economic, and ritual ties among different caste groups in Indian villages even today. In villages, the joint family system fosters strong emotional ties, but lack of infrastructure for education and health do pose challenges for natives, compelling them to migrate to nearby towns for better livelihood opportunities.

In the cities, the presence of multiple sources of amenities imparts an undeniable improvement in the lifestyle of urban people. However, this improvement is subjected to earning capacity of the individuals as well. Based on the discussion on the principles of census in 52 countries, UN organisation reported that each country offers a distinct definition of urban society and rest of the location is considered as rural. (UN,2017) Five distinct features of urban society are: (Bhowmik & Sarkar, 2015).

1. The presence of administrative headquarters, for example: District, Town, etc.;
2. Fixed number of people residing in a given location;
3. Governed by Municipality;
4. Administering criteria of municipality: broad roadways, sanitation facilities, street lighting, etc.;
5. Abundance of non-agricultural activities.

Mindset of rural and urban people develops differently based on the differences in their socio-economic and geographical situations. However, over a period of time, different societal changes occurring in the society have transformed the rural-urban dichotomy.

Some of the developments taking place, are listed below: (Bhowmik & Sarkar, 2015)

1. Rapid development in transport is influencing the dressing sense and food habits of both agrarian and urban communities.
2. Usage of internet both in rural and urban areas has increased awareness in people of both rural and urban categories.
3. Introduction of technology in agriculture contributes to reduce the gap.

Issue of Migration

The underlying reasons for migration to city areas are classified into two categories: (Dutta, 2015).

- (a) Pull-based migration, i.e., in order to improve living standards, better jobs, income opportunities and access to different services.

- (b) Push-based migration, i.e., migration that is propelled by unemployment and poverty in the countryside. Droughts and disasters also contribute to push-based migration towards the cities.

Push-based migration creates pressure on farmland, raises unemployment rate and forces the local farmers to look for alternative means of employment by migrating to nearby or far-off places from their homeland. Absence of industries in rural hinterlands is also another contributing factor for this type of migration. As the population kept increasing, the pressure on rural land also amplified leading to increased fragmentation of land holdings. Inheritance is also one of the contributing reasons for ever decreasing size of land holdings. The farmers fail to earn enough income required for their survival as they still follow the old patterns of agriculture, forcing them to migrate. Apart from migration being the main cause for rural-urban linkages, other factors are listed below:

1. Flow of information between rural and urban areas includes information on employment opportunities for potential migrants.
2. Flow of finances includes primary remittances from migrants to relatives and communities and vice versa. This also includes investments in urban based companies and real estate ventures.
3. Exchange of goods between urban cities and villages is an essential element of rural-urban linkages.
4. Decreasing income from agriculture due to lack of land, water, or capital, is one strong negative factor. The farmers do not have the means to intensify production and switch to high value crops or discard farming profession and engage in non-farming activities and relocating themselves in urban areas.

Growth of Slums and Squatters in Cities

Efficient economic development and availability of physical infrastructure attracts villagers towards towns and cities. A large part of migrated population, particularly in large cities lives in slums and squatters with limited infrastructure. For example – Dharavi at Mumbai city is the largest slum in Asia. Municipal authorities are unable to provide basic facilities to this ever-increasing population due to limited resources. On the other hand, overcrowding in the cities leads to environmental pollution as the resources are overutilised. Hence, there is a dire need to provide basic infrastructure in villages and small towns so that migration can be brought under control (Bala, 2017).

Migration, however is a temporary phase in the lives of people from villages. Irrespective of whether they migrate for work, study or earn a career, they do hope to return to their original places. However, the reasons for rural folk for being discouraged to settle down completely in urban areas are as follows:

- Urban to rural household remittances are declining while the capability of poor urban households to import food for their own consumption is becoming difficult in view of growing transportation costs.

- Temporary agriculture workers today are urban based due to diverse income sources among the poor urban households.
- Retrenchment in industries as an effect of COVID-19, contributed to reverse migration with families returning to their homes for survival as an effect of lockdown imposed in the country during this period. Villages during this period experienced massive reverse migration. New kind of connections with urban areas started becoming popular like Farmer Producer Organisations (FPOs) having opportunities to create employment within the villages and contribute to the supply chain. Women SHGs gained opportunities to prepare masks and sell them in nearby villages and towns. The techies also returned to their homes, working online as per the instructions of their respective companies. Staying back in the villages and continue earning started becoming possible for most of the migrants during this period.
- Latest to mention, globalisation is creating new patterns of linkages for small towns and rural areas often referred to as 'metropolitan' of world economy i.e., a mesh of horizontal and vertical networks among rural settlements. Growing internet penetration in interiors of villages and small towns has substantial impact on rural livelihoods and basic facilities like education and health can be obtained online at home and this also discourages families to migrate.

Presence of Rural and Urban Linkages

There is always a complex linkage and interdependency between cities and villages in every country. Rural system requires market for its produce, supply of inputs of various kinds, off farm employment and other livelihood opportunities from urban system. Urban centres help to spread innovations to rural areas that lead to economic and social transformation. In fact, rural-urban linkages are important for livelihood strategies of both countryside and urban households.

The virtuous circular model of rural-urban development popularly designed by Evans (1992) indicates an ideal situation of rural-urban linkages. According to this model, urban areas benefit the countryside through development of markets. Increased income in rural areas leads to increased demand for urban manufactured consumer goods which are again supplied by the rural sector as it diversifies into rural non-farm activity. This type of positive rural-urban interactions and the virtuous circle of development are further enhanced by backward and forward linkages between agriculture, industry and services sector which are a major source of economic growth and development. However, in reality this model seems to be irrelevant as there is a growing rural and urban disparity leading to rural-urban migration that leads to poverty and unemployment issues (Das, 2013).

Rural – Urban Continuum

Since the dynamics of rural-urban development or process of urbanisation, failed to explain fully, both the areas with particular focus on third world countries, it has

become indispensable for social researchers and policy makers, to analyse the process of urbanisation on rural-urban continuum, based on specific range of indicators. In fact, one of the basic determinants of Rural-Urban Linkages is the rural-urban continuum itself. While rural refers to remote farming areas and urban, crowded cities both along a continuum with multiple types of factors people, goods, public-private capital, money, information, and interactions (Kokati, 2015).

Robert Redfield, in his work on Mexican peasants introduced the concept of ‘rural–urban continuum’ as ‘folk–urban continuum’. He observed that the country moves from folk to urban end of the continuum i.e., a shift from traditional to modern society. Hence the continuum helps researchers to identify differences in terms of degree of urbanisation as one moves from one extreme to the other (Dutta, 2015)

Strongly coordinated linkages are necessary between both villages and cities regarding the transport of agricultural products, labour, goods and services, knowledge and information, infrastructure, policies, and institutional arrangements that are fundamental components of increased standard of living. Agro processing industries and micro enterprises foster rural- urban linkages. Non-farm enterprises also draw considerable attention to rural- urban transformation particularly in developing countries. World Bank policy research (2021) recommends rural-urban continuum to understand the extent of urbanisation of a geographical area. Thus, the policies designed along the continuum can help promote inclusive and sustainable development by integrating policies across the different development sectors. Kerala is the best example for rural- urban continuum in India. This is because it has developed over a period of time–thriving agriculture sector, strong knowledge-based economy, and an improved lifestyle for its residents (Manishsiq, 2023).

The following figure represents the rural and urban linkages:

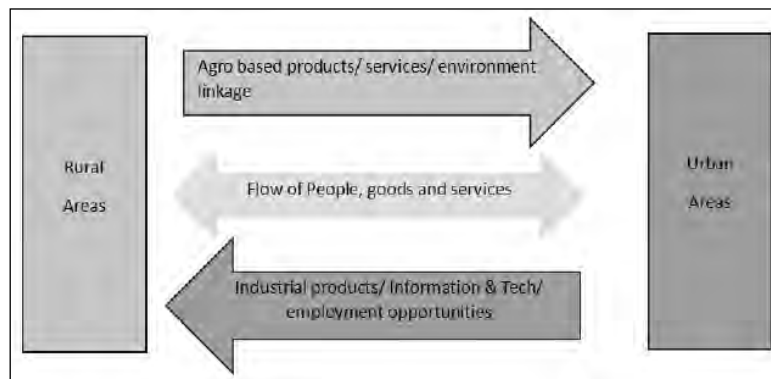


Figure 1: Representing rural and urban linkages.

Current Trends in Rural-Urban continuum:

- Since the past few decades, globalisation has increased mobility of people, resources and enhanced inter and intra city connectivity.

- As a result of network connectivity, the physical barriers between the countries and regions are noticed to be decreasing.
- Rural hinterlands today are found to be connected with multiple urban centres, and this is automatically contributing to strengthening of rural–urban linkages.
- As the swing factors increase in villages and urbanised cities, there is mobility observed in both the sectors and a mixed economy of primary and tertiary sectors take place.

These mixed economy zones gradually transforming into peri - urban areas (known as semi-urban areas) originally located in rural areas surrounding the cities but are currently observed to be most influenced by urbanisation. (Manishsiq,2023)

Development of Peri-urban Areas

- Over a period of time, peri-urban areas are recognised as city outskirts. They tend to develop fast as the population here has close socio-economic ties with the cities. Farmers in these peri-urban areas are discarding their professions and entering into non-farming businesses at the same time handing over their land to real estate builders who make money by converting the land into residential areas. Rural population in the city outskirts are increasingly adapting to urban lifestyles. This kind of rural urbanisation is slowly taking place due to the flow of information and technology from urban to rural areas (Sietchiping, 2014).

Changing Eco-System: Upcoming Challenges

- Agriculturally productive lands are used for residential and commercial purposes.
- There is an increase in wastage dump yards that in turn increase disaster risk and vulnerability.
- Access of local people to water, food, fuel fodder and fibre from ecosystem is reduced.
- Rise of middlemen in the supply chain of food increases the prices of essential commodities.
- Escalation of land value in peri-urban areas is another matter of stress for local people as it encourages unhealthy race for sale, purchase and rent of residential/commercial areas surrounding the cities contributing to increased cost of living. (Manishsiq, 2023)

R-U linkages in Developed Economies vs India

Developed economies like UK and US have stronger and more integrated linkages that facilitate efficient flow of resources like goods information and people. These countries have strong infrastructure, diversified economies and people have access to better amenities. They have well established food systems and social security measures that

form a safety net for poor and vulnerable population. Further, developed economies focus on sustainable development by promoting environment-friendly practices both in rural and urban areas. Thus, existence of healthy R&U interdependencies does not create any noticeable difference in lifestyles of people in both areas. As a result, people in developed countries prefer staying outside the cities, in rural or suburban areas unlike in India where cities witness heavy urban agglomeration in the form of slum areas.

Rural people in India depend heavily on agriculture for their livelihoods and they do not have access to basic infrastructure; water, electricity, sanitation, proper healthcare and quality education required for a decent living. Government structures in rural areas are insufficient and policies often do not reach the beneficiaries. As a result, people continue to suffer from food insecurity, unsafe drinking water resources and are forced to migrate to cities often described as push-based migration. These migrated villagers join in slums of cities and become the main reason for their agglomeration.

Government Efforts to Improve Rural-Urban linkages in India

The Government of India with an intention to provide basic facilities and employment opportunities for both village and city dwellers, has made efforts from time to time by implementing feasible public policies. (Kumari, 2015)

Pradhan Mantri Gram Sadak Yojana (PMGSY): launched in 2000 by the Government of India, with the objective of providing road connectivity to all rural habitations with the population of more than 500 persons by the year 2007. The primary focus of the programme was on construction of new roads that include the cross-drainage works as decided by the Ministry of Road Transport & Highways. These improved road network will contribute to enhanced rural-urban linkages.

Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA): Launched in 2005, it focuses on providing employment to the unskilled labourers all over the country. It is a demand driven programme where the provision of work is triggered by demand for work by the wage seekers. Unlike other wage employment programmes, it provides legal guarantee for employment and also compensation for the workers if not provided with suitable employment.

National Rural Livelihoods Mission (NRLM): The mission aims to promote rural livelihoods by improving skills, financial support and market access to rural entrepreneurs. Launched in the year 2011, NRLM is a modified method of promoting self-help groups in villages and at a later stage, encouraging their convergence with local Panchayati Raj Institutions (PRIs) for promoting women empowerment in the villages. Rural entrepreneurship encouraged through this policy, reduces dependency of rural areas on urban centres.

Integrated Development of Small and Medium Towns (IDMST): This scheme was initiated during 1979-80 and later merged with Urban Infrastructure Development

scheme for Small and Medium Towns (UIDSSMT) in 2001 with the aim to reduce migration of people from small towns to big cities. Its other objectives were to improve infrastructure facilities to help public create durable assets and gain quality service in their own towns, enhance PPP mode investments in development projects, decentralise economic growth, improve employment opportunities and promote resource generating schemes for urban local bodies. (Cag.gov.in,2002)

Smart Cities Mission (SCM): Launched in 2015, it aimed to promote the development of 100 smart cities within India that are sustainable liveable and inclusive. It included development of urban infrastructure and services accessible to both countryside and metro cities. Main objective of this mission was to integrate city functions, improve infrastructure, utilise the scarce resources more efficiently and improve the living standards of its citizens.

Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Mission: Launched in 2015, the AMRUT adopts a project approach to ensure basic infrastructure services relating to water supply, sewerage, septage management, storm water drains, transport and development of green spaces and parks with special provision for meeting the needs of children (AMRUT, 2015). This mission focusses on small cities and towns which are to be further developed into future smart cities.

Digital India Mission: It aims to promote digital connectivity and access to digital services in rural areas. Launched in 2015, the mission contributes to bridge digital divide between cities and villages by enabling rural folk to access the benefits of technology and e-governance. The main goal of the mission is to transform India into digitally empowered society and knowledge economy.

Provision of Urban Amenities in Rural Areas (PURA) initiated by former President A.P.J. Abdul Kalam (during 11th Five-Year-Plan) was the first attempt of the Government to forge partnership with private sector in building infrastructure for holistic and accelerated development of rural areas around a potential growth centre in Panchayats by providing livelihood opportunities and urban amenities to improve living standards (Dwivedi, 2012).

PURA aimed to achieve holistic and accelerated development of compact areas around a potential growth centre in a Panchayat through PPP model by providing livelihood opportunities and urban amenities to improve the quality of life in villages. Through PURA, our former President Dr APJ Abdul Kalam visualised building a sustainable and viable model of service delivery in rural areas to be managed through an implementation framework between local people, public authorities, and private sector. (Sharma, D.A. 2015)

However, PURA was further restructured as a demand driven PPP during the 11th Year Plan based on the findings of National Institute of Rural Development and Panchayati Raj (NIRDPR). PURA envisaged a consolidated development plan with employment generation as the main focus, on provision of shelter, healthcare,

education, skill development, physical/online connectivity, and marketing facilities to the villagers. (Sharma.A, 2015) Thrust areas of PURA include:

- Creation of employment opportunities for all the youth within the working age group;
- Capacity building in education sector; and
- Provision of quality and timely healthcare services. (Mayaram,2010)

Implications of PURA

Failure of PURA was due to its excessive dependency on voluntary support of private sector. Internal inefficiencies of Government machinery also contributed to its failure.

PURA's PPP business model brought together non-convergent interests of both public and private sector due to which the policy implementation suffered a setback. Indian Government tried to adapt single window system during Public-Private partnership phase to address bureaucratic inefficiency. But the alternative arrangement met fierce resistance by stakeholders who were benefitted from the existing system. Thus, lack of alternatives to dysfunctional institutions involved in PURA is another reason for its failure.

Central government failed to incentivise the states to cooperate in the implementation of PURA as a result states did not support the project. Further lack of community leadership was one of the prominent reasons for failure of PURA projects across the nation. Few PURA projects like Paraiyar PURA succeeded based on the strength of local leadership.

Shyama Prasad Mukherjee **RURBAN** Mission (SPMRM) is another national development policy focussing on improving rural-urban linkages which was launched by Prime Minister Narendra Modi. RURBAN mission was launched in the year 2016 with a budget of Rs.5142.08 crores. Launch of the policy was first done in Dongargarh (Chhattisgarh) rural area.

India's progress is marked by significant urbanisation as a result of increased growth, entrepreneurship and increased income, however at a slow and steady pace. It is also inhibited by unplanned growth and increasing environmental degradation in urban areas at the same time Indian villages experience agrarian distress, growing unemployment, natural resource degradation and series of farmer suicides (Rahman, 2018).

In this context, RURBAN Mission aims to bring urban amenities in rural India, by building 300 rural growth clusters across the country in order to –

1. bridge the rural urban divide related to infrastructure & services;
2. act as vehicle for rural development; and
3. attract investment in rural areas.

The mission focuses on migration and its adverse consequences i.e., increasing pressure on urban areas & services, issues of illegal occupations and encroachment and the questions around who has to migrate to cities. Rurban outlines 14 desirable components of the mission which are cited in Table 2.

Table 2: Fourteen ‘Desirable Components of the Rurban Mission in India

Themes	Activities under the Rurban Mission
Livelihoods	1. Skill development courses linked to employment or entrepreneurship
	2. Processing of agricultural goods & provision of services, storage, and warehousing
Services	3. Mobile health units
	4. Sanitation facilities
	5. Provision of piped water supply
	6. Solid and liquid waste management
	7. Public transport
	8. LPG gas connections
	9. Digital literacy
	10. Citizen service centres—for electronic delivery of citizen centric services
Infrastructure	11. Upgrading school/higher education facilities
	12. Village streets and drains
	13. Streetlights
	14. Inter-village road connectivity

Source: http://rurban.gov.in/download/FAQs_Eng.pdf.

The components concentrate on contemporary pressing needs of the society, i.e. solid waste management, agro-processing, etc. Apart from imparting skills, Rurban also aims at improving the physical infrastructure such as roads, electricity, and internet connectivity. In the process of implementing Rurban, Ministry of Rural Development has identified 300 clusters and 20 villages across India with population ranging between 25,000/ and 50,000/ scientific process of cluster selection.

Critical aspects of ‘Rurban’

RURBAN clusters, with rural soul and urban facilities fail to recognise the continued discontent among the existing social structures like poverty unemployment, underemployment, and local politics.

Other persistent issues are the presence of shrinking land holdings, caste discriminations, scarcity of rainfall and insufficient monetary resources all of which make the lives of farmers difficult. Big cities like Mumbai, Delhi, Hyderabad, Bangalore and upcoming cities like Indore and Nagpur demonstrate that urban model of development has its own set of problems like insufficient and unequal access to jobs

and public services, environmental degradation and other conflicting agendas (Narain, 2009).

It was observed that Rurban policy implementation is done with focus on completing it rather than creating synergies or other convergence practices of policies to be implemented at the ground level. The institutional structure for policy integration is also sparse and unprepared. It was observed at the field level that every development policy had a field implementation machinery like – Project officer (PO) and Assistant Project officer (APOs) responsible for implementation of the programme at field level except for RURBAN (Maurya, 2022).

Strengthening Rural and Urban Linkages – for Holistic Development

Need of the hour is to minimize rural-urban divide and simultaneously strengthen Rural-Urban Linkages so as to facilitate food security, generate employment opportunities, reduce poverty, malnourishment etc. There seems to be a beautiful synergy between agriculture in villages, micro small and medium enterprises in urban centres. This synergy is crucial for the development of local economies and for implementing more pro-poor economic policies throughout the country (Kakati, 2015).

Following is the list of areas where there is a scope for further strengthening Rural-Urban linkages (Kakati, 2015).

- **Argo-Based Products:** There is a constant movement of agricultural goods from rural to urban areas. For example, foodgrains, vegetables, fruits, sugarcane etc. Similarly, production inputs like seeds, fertilizers pesticides and machinery move from urban centres to rural areas to help increase farm output.
- **Creation of Employment Opportunities:** Rapid urbanisation opens vast employment opportunities in urban centres in construction and manufacturing industries, petty business and services that encourages movement of the people.
- **Public Movement:** Almost all rural households often visit urban centres either regularly or occasionally for their various requirements, purchases- contracting government offices for completing their assigned duties.
- **Money Transfer:** Progressive institutionalisation of banking and credit institutions and their increasing presence in rural areas help for rural -urban linkage. i.e. avail rural households varying types of financial facilities i.e. remittances, savings, credit insurance, etc.
- **Information Flow:** Development of ICT and mobile networks has increased awareness among both the rural and urban population thereby intensifying rural and urban linkages.
- **Environmental Linkage:** Environmental degradation affects both rural and urban population. Urbanisation and industrialisation progressively expand their

geographical boundaries and pollute the rural environment through spreading industrial waste.

- **Improving Infrastructure Facilities:** Improving infrastructure facilities like *pucca* houses, road connectivity, availability of health, education and electricity, help the farmers to survive and reduce forced migration.
- **Changing rural & urban scenario:**
 - Progressive increase in output of agriculture, livestock, fisheries, and forestry;
 - Increased trade/ business of goods and services;
 - Improvement in HRD index in terms of 10 measurable indicators— Education, health, standard of living, drinking water and sanitation; and
 - Rural and Urban areas are mutually reinforcing areas and therefore not to be treated as different competing development spaces anymore.

Conclusion

Development of a country cannot be holistic unless both its rural and urban areas actively contribute for nation building. In this context, rural and urban linkages have a crucial role to play. The reciprocal flows of people, goods and services with multiple linkages are related to food systems, clothing, and career choices across rural-urban continuum. The increased globalisation resulting in improved networking has profound effect on both rural and urban populations and their lifestyles including the rural and urban linkages. There is a need to preserve and improve further these linkages and interdependencies in order to protect our economic and cultural identities.

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