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CRITICAL ANALYSIS OF GROWTH CENTRE & SATELLITE TOWNS: A CASE OF SHIVDASPURA, CHANDLAI & CHOMU TOWNS OF JAIPUR

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ABSTRACT----------
The rapid urbanization of the Jaipur Metropolitan Region necessitates decentralized development to mitigate core city infrastructure strain. This study critically evaluates the efficacy of designated growth centres – Shivdaspura, Chandlai, and Chomu – in achieving polycentric regional development. Employing a mixed-methods framework integrating spatial land-use analysis, accessibility metrics, and socio-economic indicators, the research assesses functional integration and governance coherence. Findings reveal divergent trajectories: Chomu demonstrates emergent sub-centre characteristics with diversifying employment, supported by its historical agricultural base. Conversely, Shivdaspura and Chandlai function primarily as residential extensions, characterized by high out-commuting, industrial fringes, and significant infrastructure deficits. Shivdaspura faces specific environmental constraints, including groundwater quality issues, complicating sustainable high-density expansion. The broader context shows accelerated conversion of agricultural land to built-up areas from 1993 to 2015, exacerbating urban heat island effects. Fragmented development and weak local job creation constrain autonomous growth dynamics. Without coordinated regional governance, the current model risks reinforcing dependent sprawl rather than establishing independent nodes. The study proposes policy measures emphasizing employment clustering around transit nodes, phased infrastructure financing linked to density, and inter-municipal revenue sharing. These strategies are essential to transition from peripheral residential sprawl to functionally robust growth centres, thereby stabilizing the metropolitan system and enhancing regional equity through sustainable, polycentric planning frameworks.

KEYWORDS: *Jaipur Metropolitan Region; Growth Centres; Satellite Towns; Polycentric Development; Functional Integration; Land-Use Change; Transit-Oriented Development; Regional Governance; Shivdaspura; Chandlai; Chomu; Urban Sprawl; Sustainable Urban Planning.*----------

1. INTRODUCTION

Jaipur, the capital city of Rajasthan, has experienced significant economic growth and urbanization over the past few decades. However, this rapid development has also led to considerable challenges, particularly in the city's urbanizable (U2) areas. These areas, once rural, are now witnessing the effects of hasty and unplanned urbanization. While Jaipur has been one of the fastest-growing cities in India, the expansion has resulted in numerous problems such as traffic congestion in the city core, increasing urban sprawl, haphazard growth in the outskirts, and a rising demand for housing.

Jaipur's growth centers play a crucial role in supporting the city's expansion by accommodating population growth, economic activities, and infrastructure development. These strategically planned zones are envisioned to reduce congestion in the core city while providing essential resources, employment opportunities, and residential spaces. Traditionally, the areas surrounding Jaipur have contributed significantly to the city's economy through agriculture, trade, and small-scale industries. However, rapid urban expansion and private development pressures are transforming these regions, altering land-use patterns and increasing demand for urban services.

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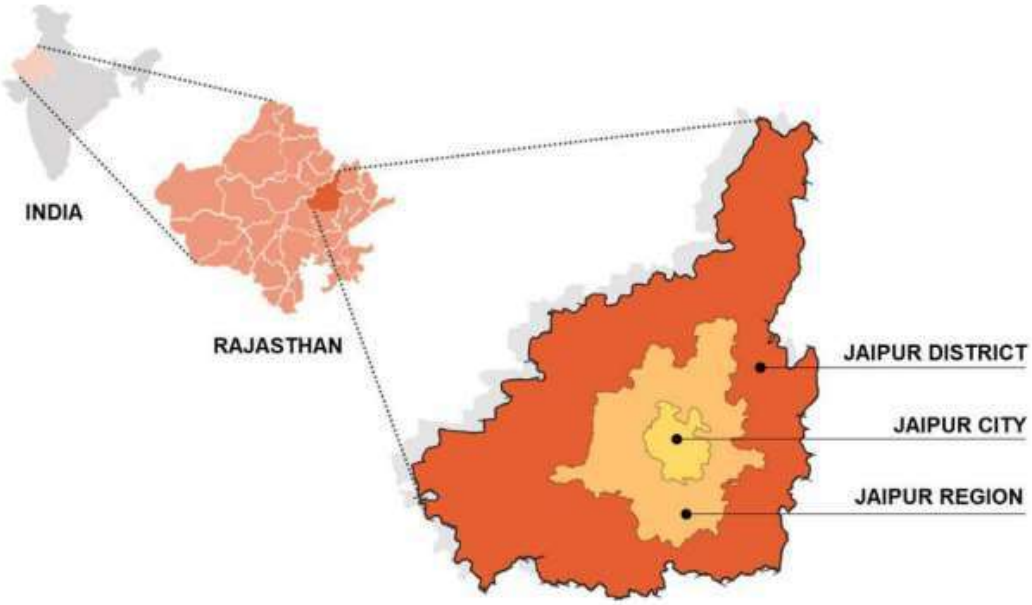


Figure 1 Location map of Jaipur, India

Source: Author

As Jaipur's footprint expands, growth centers such as Mahindra World City, Ajmer Road, and VKI Industrial Area have emerged as hubs for residential, commercial, and industrial activities. However, despite their planned nature, several challenges persist, including gaps in infrastructure, environmental concerns, and the need for better governance. Issues such as inadequate road networks, inefficient drainage and waste management systems, and limited access to healthcare and education facilities pose significant threats to sustainable urbanization. Additionally, the conversion of agricultural land into industrial and residential zones has led to a reduction in green spaces, rising air pollution, and increased pressure on groundwater resources.

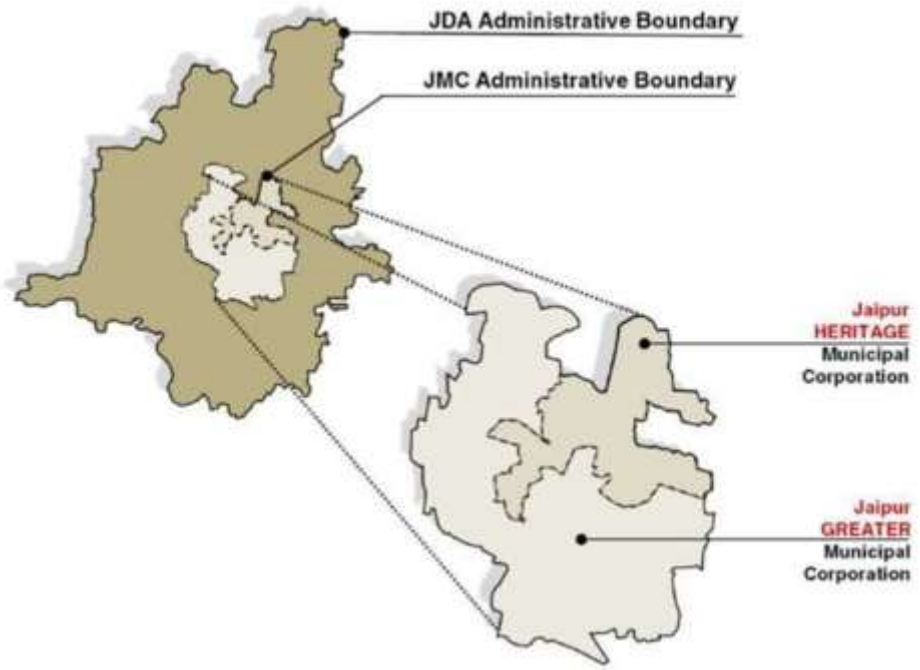


Figure 2 JDA & JMC Administrative Boundary

Source: Author

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The economic role of Jaipur's growth centers is expanding, with industries shifting from the congested urban core to peripheral zones. Large-scale industrial and IT developments, such as those in Sitapura, Mahindra SEZ, and the Ring Road corridor, have led to a surge in employment opportunities. However, the lack of adequate planning for workforce housing and transportation infrastructure often results in unregulated settlements, increasing urban sprawl and traffic congestion.

Maintaining a balance between urban growth and sustainability is critical for Jaipur's long- term development. The success of these growth centers depends on well-defined zoning regulations, integrated infrastructure planning, and efficient public transport connectivity. To avoid unregulated expansion and environmental degradation, development policies should prioritize mixed-use planning, green infrastructure, and sustainable resource management. Moreover, community participation in planning and governance is essential to ensure that local needs are met while aligning with Jaipur's broader urban vision.

Jaipur's growth centers represent a key strategy for managing the city's expansion. However, ensuring their sustainability requires a proactive approach to infrastructure, environmental conservation, and governance. A well-planned and regulated framework will allow these areas to function efficiently, supporting Jaipur's economic and demographic growth while preserving the region's ecological and social balance.

1.1. Identification of problem

Jaipur, the capital of Rajasthan, serves as the socio-economic and political hub of the state. As one of India's fastest-growing cities, it has witnessed rapid urbanization, compelling small agricultural communities in its vicinity to transition swiftly to urban or industrial lifestyles.

The city's urban growth dynamics include the intensification of land use in developed areas, infilling of vacant land pockets, peripheral expansion, and the merging of outlying settlements. A significant portion of Jaipur's expansion has been concentrated in its fringe areas, leading to increased environmental stresses. The dispersed nature of settlements, rising pollution from industrial and residential sources, escalating road traffic, and inadequate infrastructure have further strained these regions.

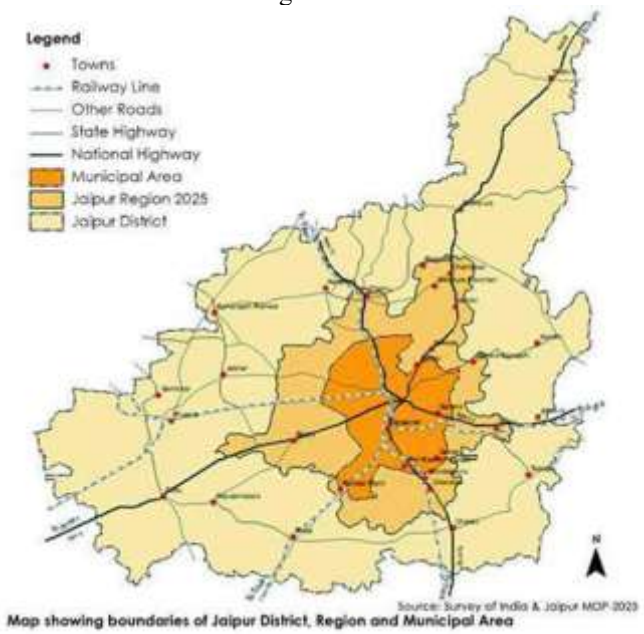


Figure 3 Map showing boundaries of Jaipur District, Region and Municipal Area
Source: Survey of India and Jaipur MDP-2025

To address these challenges, the development of satellite towns and growth centers is crucial. These planned urban nodes can help distribute population and economic activities more evenly, reducing pressure on Jaipur's core while fostering sustainable development in surrounding areas.

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Key issues have been identified for research in Jaipur's context:

- The need to refine the concepts of rural-urban fringes and the transformations in rural areas triggered by urbanization.
- Challenges related to land-use patterns and addressing the pressing problem of land degradation in the rural-urban fringes.
- The interplay between local and extra-local factors in shaping land-use dynamics in Jaipur's peri-urban areas.

2. MATERIALS AND METHODS

2.1. Critical Analysis of Development Dynamics in Jaipur's Satellite Towns

The conceptualization of satellite towns and growth centres represents a foundational strategy in urban planning aimed at decentralizing population and economic activity from primate cities. In the context of India, where urban agglomerations support more than 30% of the population and continue to expand rapidly, the metropolitan city of Jaipur serves as a primary economic hub, attracting millions daily and draining resources from its hinterlands.

The theoretical premise of satellite towns is that they should be self-containing, independent cities planned outside the metro to manage urban sprawl and house a mushrooming population. However, historical precedents, such as those in New Bombay and other Asian contexts, indicate that satellite towns often fail to meet original objectives unless they are rigorously self-contained with robust employment bases.

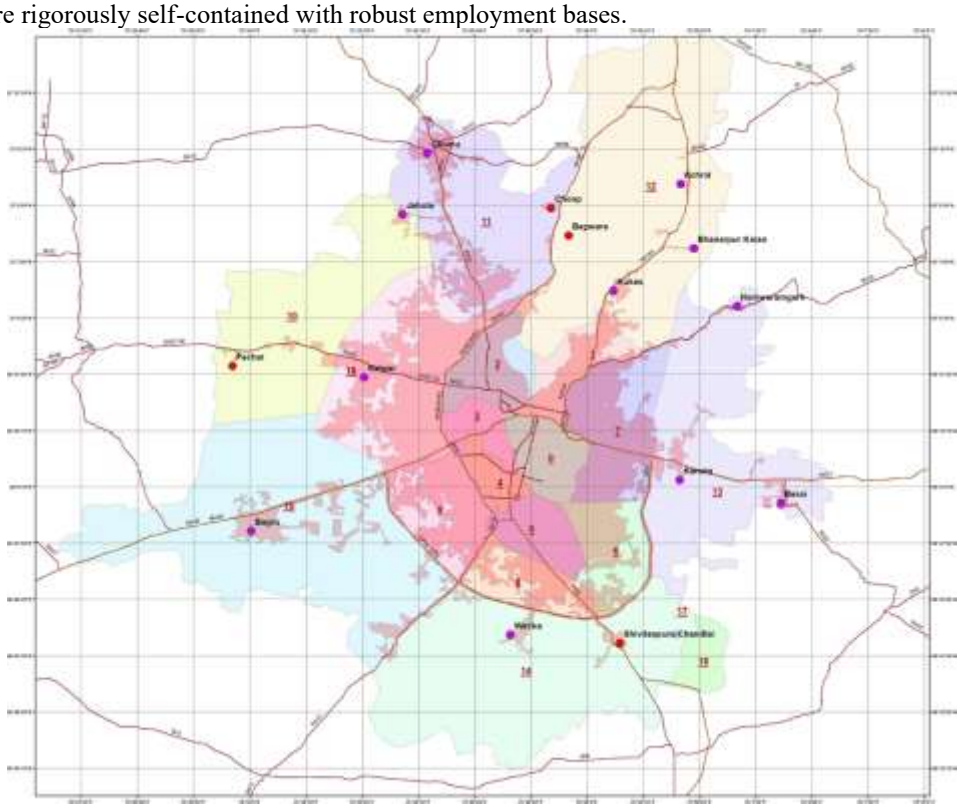


Figure 4 Map showing development dynamics in Jaipur's Satellite Towns

Source: Author

2.2. Spatial and Functional Differentiation of Case Study Towns

The comparative analysis of Shivdaspura, Chandlai, and Chomu reveals distinct functional roles within the Jaipur Metropolitan Region. Chomu, located in the northern periphery, exhibits characteristics of an emerging sub-centre. Its development is underpinned by a strong agricultural base, as evidenced by micro-level studies of its labor market and recent initiatives in crop yield enhancement through cluster front-line demonstrations. This economic diversification allows Chomu to retain a portion of its workforce and provide local services, reducing total dependency on Jaipur for daily needs. Conversely, Shivdaspura and Chandlai display patterns typical of dependent satellites. Shivdaspura, situated closer to the urban core, has become integrated into the city's residential and industrial fringe. Recent hydrochemical assessments of groundwater in Shivdaspura highlight significant physico-

chemical variations, including concerns related to fluoride and heavy metals, which pose challenges for sustainable habitation and require rigorous environmental management

Chandlai, similarly, functions largely as a residential extension with logistical activities, lacking the diverse employment opportunities necessary for autonomous growth. The high rate of out-commuting from these towns to Jaipur underscores their failure to act as effective counter-magnets to the core city's growth. This dependency exacerbates traffic congestion and infrastructure strain, issues that are prevalent in rapidly growing Indian cities where unplanned growth limits economic expansion prospects.

2.3. Land-Use Changes and Environmental Impacts

The expansion of Jaipur and its surrounding towns has led to profound land-use and land-cover (LULC) changes. Remote sensing data indicates that urban settlement in the Jaipur region increased from 13.5% to 57.3% between 1993 and 2015, primarily at the expense of open and agricultural land. This rapid conversion contributes to the urban heat island (UHI) effect, with studies showing a direct correlation between urbanization, vegetation loss, and increased land surface temperature.

The spatial dynamics of this sprawl are not uniform; growth modeling using Cellular Automata and Markov chains predicts continued expansion along major transport corridors, often bypassing planned growth centres if infrastructure investment is not aligned. The environmental implications extend beyond thermal comfort. Unplanned urbanization leads to land-use heterogeneity and increased flood risk, as seen in recent assessments of the Jaipur region using AHP-TOPSIS models. The lack of integrated green infrastructure and the fragmentation of natural landscapes further degrade the urban environment, affecting the quality of life for residents in both the core and satellite towns

2.4. Governance and Policy Implications

The effectiveness of satellite towns is heavily contingent on governance structures and planning implementation. In Jaipur, institutional dynamics in public transport and urban planning often suffer from fragmentation, limiting the synergy between different municipal bodies. For satellite towns to function as true growth centres, there must be a shift from passive land development to active economic planning. This includes creating employment clusters around transit nodes, ensuring that infrastructure provision keeps pace with densification, and implementing inter-municipal revenue-sharing mechanisms to fund local services.

Furthermore, the integration of geospatial technologies in planning is crucial for monitoring growth and ensuring compliance with master plans. GIS-based assessments have proven effective in identifying suitable locations for satellite towns and analyzing their connectivity to the core city. By leveraging these tools, planners can simulate future growth scenarios and assess the impact of policy interventions, thereby moving towards a more sustainable and equitable regional development model.
In conclusion, while Shivdaspura, Chandlai, and Chomu are designated as growth centres or satellite towns, their current trajectories reflect varying degrees of success. Chomu's emergent autonomy offers a model for leveraging local economic strengths, whereas Shivdaspura and Chandlai highlight the risks of residential dependency. Achieving the desired polycentric structure for the Jaipur Metropolitan Region requires a concerted effort to align infrastructure investment, economic diversification, and environmental sustainability with robust regional governance frameworks.

Based on the provided data, Shivdaspura & Chandlai (Growth Centre) and Chomu (Satellite Town) appear to have the highest potential for development among the listed settlements.

2.5. Why Shivdaspura & Chandlai?

- Located very close to Jaipur, in the Southeast (SE) direction, making it highly accessible and favorable for rapid urban expansion.
- As per MDP 2025, it has the highest projected population among the four designated growth centres, indicating that even at the time of planning; the government anticipated its fast-paced development.
- Proximity to key urban infrastructure and highways further enhances its attractiveness for real estate, industries, and commercial activities.

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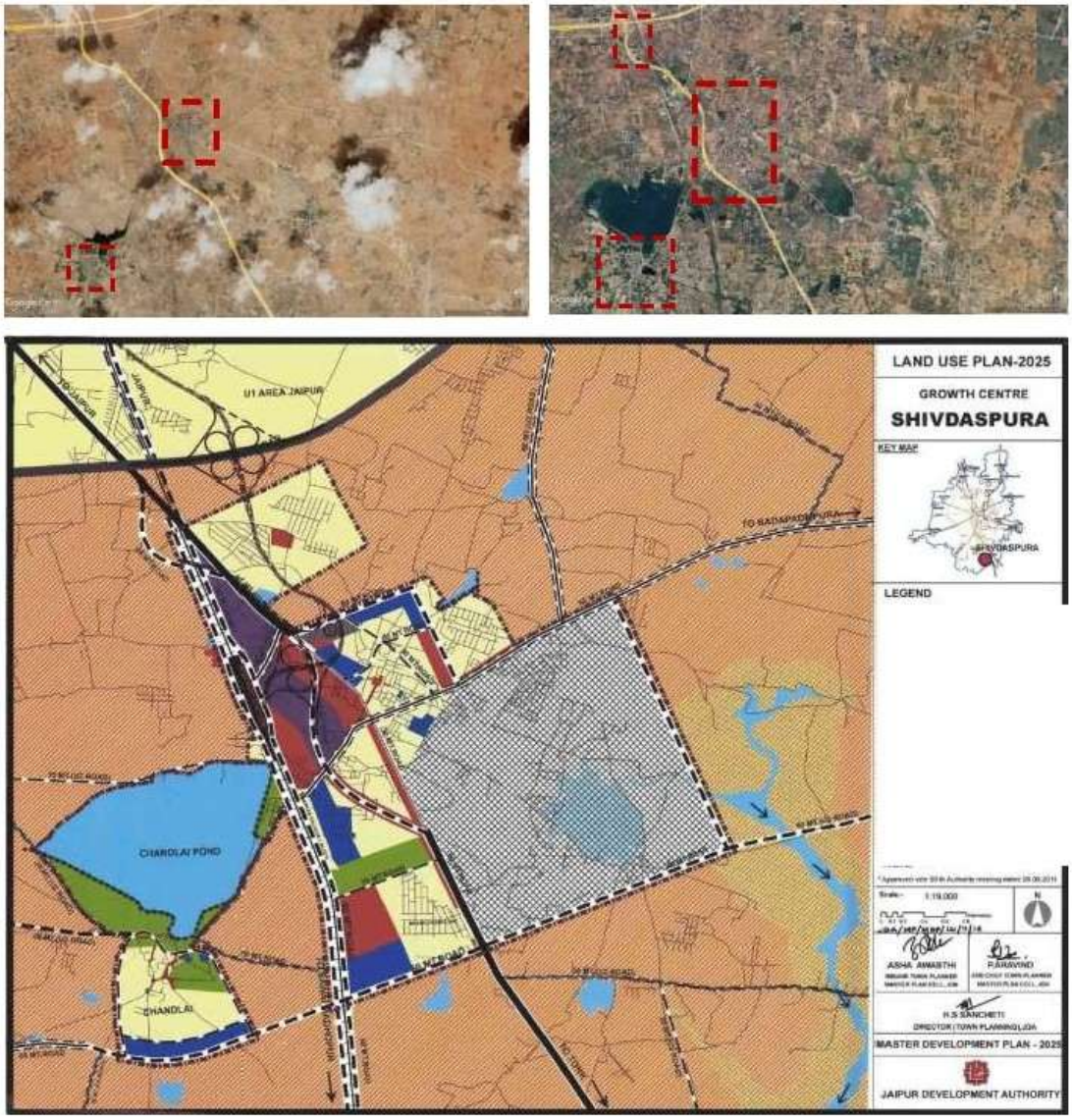


Figure 5 Landuse Map of Shivdaspura-2025

Source: Jaipur Development Authority

2.6. Why Chomu?

- Positioned opposite to Shivdaspura & Chandlai, in the Northwest (NW) direction, Chomu was envisioned as a self-sustaining town capable of independent development.
- Among all satellite towns, Chomu has the largest allocated area, which suggests that at the time of planning, it was expected to have the highest growth potential.
- Its strategic location and accessibility make it a significant node for urban expansion beyond Jaipur.

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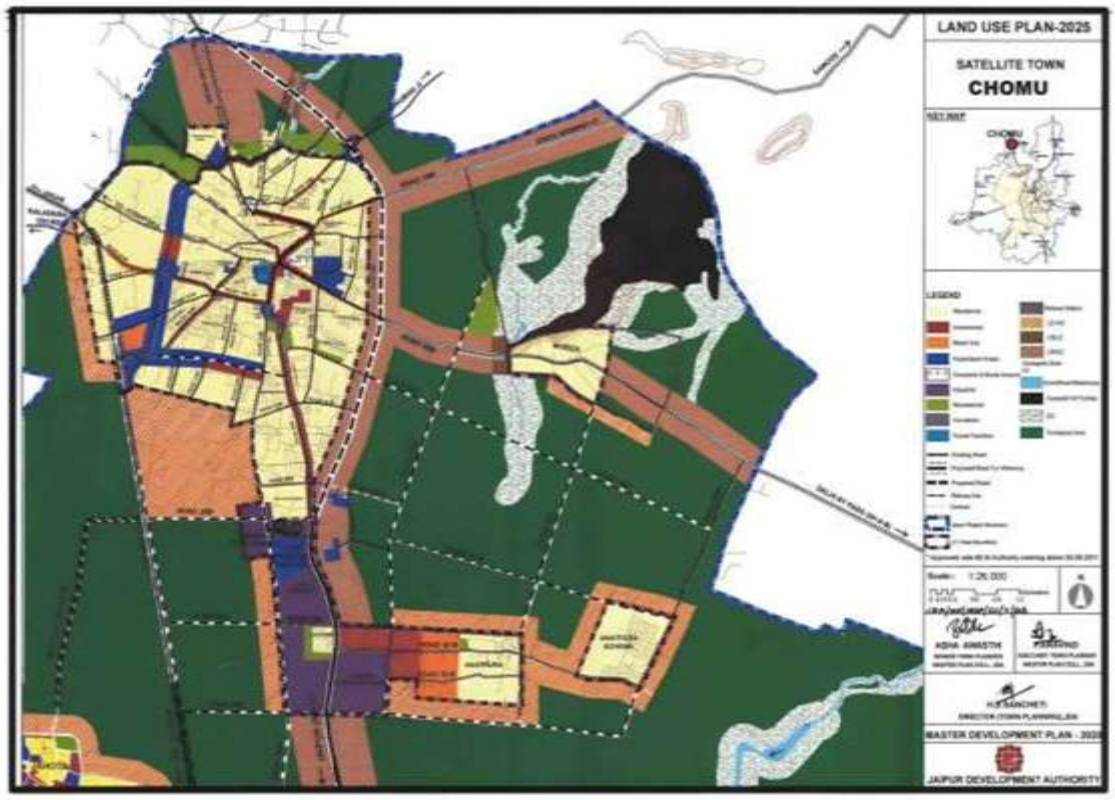


Figure 6 Landuse Map of Chomu-2025

Source: Jaipur Development Authority

3. RESULTS

3.1. Shivdaspura & Chandlai

- Comparison of 2011 and MDP 2025 Proposed Plan: When overlaying the 2011 map and the existing development map onto the MDP 2025 proposed plan, it is evident that only 45% of the proposed development had been achieved by 2011.
- Current Status in 2025: Even after 15 years, as per the latest existing development, only 65% of the proposed MDP 2025 plan has materialized on the ground.
- Growth Pattern: The town is expanding in a radial pattern, as observed in the overlapped maps of existing and proposed 2025 plans.
- Development between Railway Line and Major Road: There is only 10-20% development in the area between the railway line and the 60m wide road, indicating that implementation is still lagging despite planning efforts.
- Lack of Compact Development: Due to spatial expansion in all directions, the town lacks compact development, leading to fragmented urban growth.
- Predominance of Residential Growth: The majority of growth is seen in the residential land use category, while industrial development remains minimal, which could potentially be a threat in the future due to a lack of industrial diversification and employment opportunities.
- Greenfield Airport Proposal: A special area was reserved for a Greenfield Airport, but the central government scrapped the project, stating that Jaipur does not require a second airport in such close proximity. The land is now being repurposed under the Town Planning Scheme (TPS) for alternative development proposals.
- Shivdaspura as a Growth Centre: The MDP 2025 plan identified Shivdaspura as a growth center since it is located 25 km from Jaipur. However, due to uncontrolled spatial growth, Shivdaspura is now almost merging with Jaipur and might become an integral part of the city in the coming years.

3.2. Chomu

- When comparing the 2011 development with the proposed MDP 2025 map, it is clear that around 60% of the proposed development in Chomu has taken place so far. Despite being identified as a satellite town located

just 33 km from Jaipur, the expected pace of growth hasn't been fully achieved. As per the MDP projections, the town should have witnessed more comprehensive development by now, but around 40% of the planned areas still remain underdeveloped.

- Chomu shows a dual pattern of growth—it is expanding in a radial direction from the core due to natural urban growth, while also showing linear development along NH-11, especially towards Jaipur. This linear expansion is largely influenced by proposed infrastructure and connectivity. However, even though growth is happening, it is more prominent in residential areas, with relatively low progress in industrial zones, which were proposed but not fully realized.
- One noticeable gap is in the spatial growth pattern—compared to other satellite towns, Chomu shows limited outward expansion. Instead, the town seems to be developing in a compact and inward-focused manner, which on one hand helps control urban sprawl, but on the other hand, reflects a lack of broader economic push like industrial or institutional investments.
- Another important issue is the transportation network. The current connectivity within the town and to surrounding areas remains weak, which can be a major barrier for daily commuters and economic linkages. This directly impacts the town's potential to attract industries and institutions, which need efficient transport systems to function.
- A major factor shaping Chomu's identity is that it still retains its semi-rural character with strong agricultural roots. While this gives it a unique advantage in terms of land availability and affordability, it also means that the transition to a fully urbanized satellite town has been slower and more organic rather than well-planned.
- However, this current underdevelopment can also be seen as an opportunity. Since land is still available and not yet saturated, Chomu can be developed as a planned residential and light-industrial hub, easing pressure on Jaipur city. Its physical separation from Jaipur is actually beneficial, as it allows the town to grow independently without merging into the larger urban fabric. Interestingly, the proposed industrial zone between Jaipur and Chomu, though underdeveloped so far, could act as a future economic link—a buffer as well as a connector—helping both towns grows in a complementary way.
- In conclusion, while Chomu has not yet reached its full potential as outlined in the MDP 2025, it still holds significant promise. With the right focus on transport infrastructure, industrial growth, and structured planning, it can emerge as a well- balanced satellite town supporting Jaipur's future expansion.

4. DISCUSSION

The study of growth centers and satellite towns in the Jaipur region highlights the critical role these urban nodes play in managing regional development, controlling unplanned urban sprawl, and ensuring balanced spatial distribution of population and economic activities. As Jaipur continues to expand rapidly, the pressure on its core infrastructure, resources, and land has intensified—making the development of satellite towns and growth centers not just relevant, but essential.

The rapid urbanization of the Jaipur Metropolitan Region (JMR) has precipitated a critical need for decentralized development strategies to mitigate the strain on the core city's infrastructure and resources. This study presented a critical analysis of the efficacy of designated growth centres and satellite towns, specifically focusing on Shivdaspura, Chandlai, and Chomu, in achieving polycentric regional development. While satellite towns are theoretically designed to function as self-contained entities that absorb population pressure and reduce urban sprawl, empirical evidence from the JMR suggests a divergence between planning intent and functional reality.

Results indicate differentiated developmental trajectories among the case studies. Chomu demonstrates emergent sub-centre characteristics, evidenced by increasing service centrality and a diversifying employment base, partly supported its historical role as an agriculturally developed tehsil with active labor markets. In contrast, Shivdaspura and Chandlai primarily function as residential extensions of Jaipur, characterized by high out-commuting rates, logistics and industrial fringes, and significant infrastructure deficits relative to their growth rates.

The analysis reveals that Shivdaspura, despite its proximity to the core, faces environmental challenges, including groundwater quality concerns, which complicate its suitability for sustainable high-density expansion. Furthermore, the broader context of Jaipur's urban expansion shows a significant conversion of open and agricultural land into built-up areas, a trend that has accelerated from 1993 to 2015, leading to increased land surface temperatures and urban heat island effects.

Without coordinated regional governance and demand-side job catalysis, the current satellite-town approach risks locking the region into low-density, dependent sprawl rather than fostering independent polycentric nodes. This research proposes a targeted policy package emphasizing employment clustering around planned transit nodes, phased infrastructure financing linked to density, and inter-municipal instruments for revenue sharing. These measures are essential to shift the paradigm from peripheral residential sprawl to functionally robust growth centres capable of stabilizing the metropolitan system and improving regional equity.

REFERENCES

1. *Chandra, S., Sharma, D., & Dubey, S. K. (2018). Linkage of urban expansion and land surface temperature using geospatial techniques for Jaipur City, India. Arabian Journal of Geosciences. https://link.springer.com/10.1007/s12517-017-3357-6*
2. *Deo, P., Siddiqui, M. A., Ramiz, M., Siddiqui, L., Naqvi, H. R., Shakeel, A., Dwivedi, D., & Deo, P. (2024). Measuring the spatial dynamics of urban sprawl in Jaipur City. GeoJournal. https://link.springer.com/article/10.1007/s10708-024-11090-x?*
3. *Deo, P., Siddiqui, M. A., Siddiqui, L., Naqvi, H. R., Faruque, U., & Dwivedi, D. (2024). An integrated approach for urban flood risk prediction using AHP-TOPSIS model: A case study of Jaipur region. Natural Hazards. https://link.springer.com/article/10.1007/s11069-024-06965-8?*
4. *Dev, M., & Biswas, A. (2020). Studying the institutional framework for the public transport system in Jaipur, India. Smart and Sustainable*
5. *Built Environment. https://www.emerald.com/insight/content/doi/10.1108/SASBE-01-2020-0003/full/html*
6. *Gu, R., Xie, Z., Takatori, C., Herold, H., & Xie, X. (2023). To what extent can satellite cities and new towns serve as a steering instrument for polycentric urban expansion during massive population growth? – A comparative analysis of Tokyo and Shanghai. ISPRS International Journal of Geo-Information, 12(6), 234. https://www.mdpi.com/2220-9964/12/6/234?*
7. *Jain, M., Korzhenevych, A., & Basu, A. M. (2021). Integrating spatial development with infrastructure provision along an envisioned transport corridor: A conceptual framework and its application to India. Land Use Policy. https://linkinghub.elsevier.com/retrieve/pii/S0264837721000879*
8. *Krishnan, S. A., & Sujith, K. M. (2021). Understanding the need of satellite towns in India. IOP Conference Series: Materials Science and Engineering. https://iopscience.iop.org/article/10.1088/1757-899X/1114/1/012043*
9. *Mangal, M., Tailor, G. S., Jain, M., Gaur, A., & Sunvariyal, H. (2023). Interpretation of diverse physico-chemical water quality parameters of Jaipur (Rajasthan) sampling sites for plantation, irrigation and fluorosis concern. Asian Journal of Research in Chemistry. https://www.ajrconline.org/AbstractView.aspx?PID=2023-16-5-8*
10. *Mathew, A., Khandelwal, S., & Kaul, N. (2017). Investigating spatial and seasonal variations of urban heat island effect over Jaipur city and its relationship with vegetation, urbanization and elevation parameters. Sustainable Cities and Society. https://linkinghub.elsevier.com/retrieve/pii/S2210670717304079*
11. *Maurya, N. K. (2022). Land use/land cover dynamics study and prediction in Jaipur city using CA Markov model integrated with road network. GeoJournal. https://link.springer.com/article/10.1007/s10708-022-10593-9?*
12. *Selassie, D. M. (2018). Suitability analysis of satellite towns using Saaty model and geographical information system (GIS). Journal of Data Analysis and Information Processing. http://www.scirp.org/journal/doi.aspx?DOI=10.4236/jdaip.2018.61001*
13. *Shaw, A. (1995). Satellite town development in Asia: The case of New Bombay, India. Urban Geography. http://www.tandfonline.com/doi/abs/10.2747/0272-3638.16.3.254*
14. *Singh, R., Kaushik, G., & Upreti, P. (2024). Urbanization and future development of satellite towns through GIS: A case study of Bagru block, Rajasthan, India. International Journal For Multidisciplinary Research. https://www.ijfmr.com/research-paper.php?id=16357*
15. *Yadav, B. L., Khan, I., & Rathore, S. S. (2023). Yield enhancement of sesame through cluster front line demonstration in Jaipur district of Rajasthan. International Journal of Agricultural Sciences. http://researchjournal.co.in/online/IJAS/IJAS-19(2)/19_541-544_A.pdf*
16. *Asiwal, R. C., Kumawat, D. K., & Sharma, R. C. (2018). Study of micro-evidences for agricultural labour market functioning in agriculturally developed Chomu Tehsil of Jaipur. Current Agriculture Research Journal. http://www.agriculturejournal.org/volume6number3/study-of-micro-evidences-for-agricultural-labour-market-functioning-in-agriculturally-developed-chomu-tehsil-of-jaipur/*
17. *Dadhich, P. N., & Hanaoka, S. (2011). Spatio-temporal urban growth modeling of Jaipur, India. Journal of Urban Technology. http://www.tandfonline.com/doi/abs/10.1080/10630732.2011.615567 "Urban and Regional Planning" – Peter Hall*