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Historical Development in Town Planning in India

(Past, Present and Future)

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Abstract: The history of town planning shows how cities have changes with time while keeping parts of their culture alive. This paper analyzes the history of town planning from ancient civilizations to modern town planning, studying the methods and techniques to improve town planning. The history of town planning has been very interesting since the introduction of the grid system in the Indus Valley Civilization. The Great Bath has always influenced advancements at that time. Britishers influence wide roads, administrative centres and new layouts. From the forts of mediaeval period to the current 3D houses and the walkthrough into the digital world has a very long journey yet interesting also.

Keywords*:* Indus Valley civilization, Grid system, British influence on Indian cities, Modern Urban planning, Cultural evolution of cities.

I. INTRODUCTION

The study of historical development in town planning in India is essential to understanding how urban form, planning ideology, and design principles have evolved in response to changing social, political, and environmental conditions. India's urban planning journey is a reflection of its civilization itself — deeply rooted in ancient wisdom, transformed by colonial influence, and continually reshaped by post-independence aspirations and modern global challenges.

This research paper aims to analyze and interpret the evolution of town planning in India, tracing its trajectory from the ancient urban centers of the Indus Valley Civilization to the modern planned and smart cities of the present era, while exploring the possible future directions of sustainable and inclusive urban growth. The purpose is to identify how planning philosophies, spatial organization, and infrastructure systems have changed through time, and how these transformations reflect the nation's broader socio-economic and cultural progress.

The study begins by examining the past, focusing on the early evidence of urban planning during the Harappan civilization, followed by the Vedic, Mauryan, and Mughal periods, and later, the British colonial era, which introduced Western planning models and administrative frameworks. Each stage represents a distinct set of planning ideologies — from the functional grid systems of ancient cities to the imperial geometry of colonial capitals.

The paper then moves to the present, analyzing the post-independence phase marked by the creation of planned cities like Chandigarh and Bhubaneswar, which symbolized India's transition towards modernism and rational planning. It further explores current initiatives such as the Smart Cities Mission, AMRUT, and PMAY, emphasizing the role of technology, sustainability, and governance in shaping contemporary urban development.

Finally, the research extends into the future of town planning in India, projecting emerging trends such as smart urban ecosystems, green infrastructure, digital mapping, and climate-resilient design. The objective is to evaluate how the lessons of history can inform the vision of tomorrow's cities — cities that are not only efficient and inclusive but also ecologically balanced and culturally rooted.

Through this analytical framework, the paper intends to present a comprehensive overview of India's planning evolution, highlighting the interconnection between historical context, engineering innovation, and policy evolution. By bridging the gap between past experiences and future possibilities, the research contributes to a deeper understanding of how town planning in India has grown from ancient ingenuity to modern scientific precision, and how it continues to redefine the relationship between people, place, and progress.

II. LITERATURE REVIEW

The development of town planning in India has been widely studied by historians, planners, and researchers, each tracing how the country's urban form evolved from ancient civilizations to the present modern context. The literature collectively reflects how planning philosophies have adapted to India's cultural, political, and technological transitions.

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Early studies on the Indus Valley Civilization highlight the cities of Mohenjo-Daro and Harappa as the earliest examples of planned urban settlements with grid-based layouts, drainage systems, and zoning principles (Ravindra, 2019). Ancient texts such as the Arthashastra and Manasara also describe systematic rules for street design, fortifications, and spatial organization, revealing a structured understanding of town planning even in early periods (Mandal, 2001).

During the medieval era, urban planning became more organic and culturally expressive, as seen in Mughal cities like Delhi, Fatehpur Sikri, and Jaipur. Scholars note how Mughal architecture integrated aesthetic geometry, water management, and social hierarchies, forming a balance between art and functionality (Mumtaz & Scriver, 2012).

The British colonial period marked a turning point, introducing Western planning concepts and municipal frameworks. Research on this phase emphasizes how the British created railway towns, cantonments, and planned capitals like New Delhi, using European planning ideals while also formalizing India's first planning institutions and legislative systems (Sivaramakrishnan, 2015).

Post-independence literature focuses on cities like Chandigarh and Bhubaneswar, which represent India's move toward modernist and scientific urban planning. Le Corbusier's design of Chandigarh brought the ideas of sectoral zoning, road hierarchy, and civic spaces, while Otto Königsberger's Bhubaneswar balanced heritage preservation with modern functionality (Rewal, 2005; TCPO, 2021). These works highlight India's transition from colonial dependency to independent experimentation in planning.

Contemporary sources such as reports by MoHUA and NIUA discuss initiatives like the Smart Cities Mission and AMRUT, emphasizing sustainable infrastructure, digital governance, and citizen participation. However, researchers also note gaps in implementation, inclusivity, and long-term maintenance (World Bank, 2022).

The targets aim at to make municipalities, and the citizens become aware of the self-created impact on cultural and natural heritage and therefore the responsibility to protect it. At the same time, it also enhances the natural and cultural heritage with respect to the local values, along with regular monitoring of positive and negative impacts on heritage assets (Framework, 2016). Urban planning in India follows a master planning approach and there has been a lot of critique about this approach ranging from being static, having ineffective public participation, weak regulatory mechanisms etc. However, there is limited evidence of alternatives to this approach being followed (NIUA, 2011)

III. HISTORICAL DEVELOPMENT

Evidence of town planning in Ancient India may be found in several ancient scriptures and puranas. Derived from the four Vedas, there are several ancient Indian treatises on town design that classify communities largely according to their purpose of establishment, location, and kind of activity. Several texts on Vastu shastra, such as the Artha sastra of Kautilya and Sukra Nitisara, are available. These texts shed light on the evolution of civic art. In addition, the shape, components, and different architectural aspects of the structures have been detailed according to the principles of the Vastu Purusha Mandala. In the wisdom of ancient Indian texts, village and city planning is meticulously outlined to ensure the well-being and prosperity of communities. Most of the plans are rectangular or square and do not appear to differ in essentials. Each village was surrounded by a wall and ditch for defense purposes. There were generally four gates in the middle of the four quarters. The center of the village was generally occupied by a temple, a tank or a public hall.

Classification of Ancient Town Planning:

Some of the plans of settlements in Ancient India have been discussed elaborately in the ancient texts like Manasara Shilpa Shastra. According to these texts ancient tows are categorized on the basis of size, shape and purpose.

1. According to size:
   - Rajdhani - The capital of the king.
   - Sakhanagra – All other categories of town besides Pura.
   - Karvata - Smaller Town
   - Nigma - Smaller then Karvata
   - Grama - Smaller than Nigma
   - Special Town Pattana – The Second residence of Town.
   - Putabhedana _ It is a similar to Pattana, in addition to being a commercial center

2. According to Shape and Purpose:
   - Dandaka
   - Nandyavarta
   - Sarvatobhadra
   - Swastika
   - Prastara
   - Padmaka
   - Karmuka

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- Chaturmukha

During the medieval period, urban growth took on new dimensions under the influence of various dynasties such as the Delhi Sultanate, the Mughals, and the Rajputs. Cities like Delhi, Fatehpur Sikri, and Jaipur reflected organic planning patterns that combined grandeur with functionality. The Mughals introduced large-scale water systems, gardens, courtyards, and axial layouts, symbolizing power, aesthetics, and environmental control. Jaipur, planned in the 18th century by Vidyadhar Bhattacharya under Maharaja Sawai Jai Singh II, stands as one of the earliest examples of a scientifically planned city in pre-modern India, designed on the principles of the Vastu Shastra and the grid pattern.

IV. MODERN AND CONTEMPORARY PLANNING

In the modern era, town planning in India has evolved significantly, reflecting the challenges and opportunities of a rapidly urbanizing nation. After India's independence in 1947, urban planning became a key instrument for nation-building and social development. The focus shifted from colonial administrative layouts to planned urban growth and balanced regional development. The creation of statutory planning frameworks such as the Town and Country Planning Acts in various states marked the beginning of formalized urban governance. One of the earliest examples of modern planning in independent India was the development of Chandigarh, designed by Le Corbusier in the 1950s. Chandigarh represented a new vision of order, functionality, and aesthetics, emphasizing zoning, open spaces, and traffic segregation. This model inspired other planned cities such as Bhubaneswar, Gandhinagar, and Navi Mumbai, reflecting a transition toward modernist planning ideals.

Chandigarh

Chandigarh stands as a hallmark in the evolution of modern urban planning in India, conceived soon after independence as a new capital for the state of Punjab and designed by Le Corbusier and his team. The master plan is based on a grid-iron structure of Sectors (each approx. 800 m × 1200 m) serving as self-contained neighbourhood units with their own shops, schools, health centres, and green spaces.

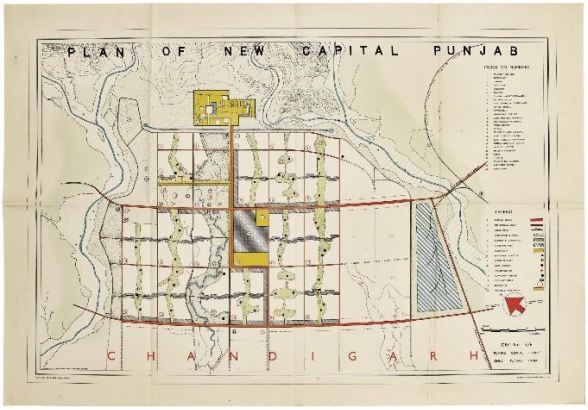

Image i: Plan of Punjab

Image ii Plan of Chandigarh Sectors

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The roads of the city were classified into seven categories, known as the system of 7 Vs.

- V-1 Fast roads connecting Chandigarh to other towns
- V-2 Arterial roads
- V-3 Fast vehicular roads
- V-4 Free-flowing shopping streets
- V-5 Sector circulation roads
- V-6 Access roads to houses
- V-7 Footpaths and cycle tracks

The residential buildings were governed by a mechanism known as 'frame control' created by the municipal administration to control their facades. This fixed the building line and height, and the use of building materials. Certain standard sizes of doors and windows are specified, and all the gates and boundary walls must conform to the standard design.
Chandigarh has four Main work centres – The capital complex in the north east, The educational institutes in the north west, The city centre in the heart, The industrial area in the south east. The educational, cultural, and medical facilities are spread all over the city; however, major institutions are located in Sectors 10, 11, 12, 14, and 26. The Capital complex, Sector 1, comprises three architectural masterpieces, the “Secretariat", the "High Court", and the "Legislative Assembly".

Smart Cities Mission

The Smart Cities Mission (SCM), launched by the Government of India in June 2015, marks a transformative step in the evolution of town planning. The mission’s objective is to promote sustainable and inclusive cities that provide a high quality of life through smart solutions, efficient governance, and citizen participation. Under this initiative, 100 Indian cities were selected to be developed as “smart cities,” focusing on improving core urban infrastructure, ICT integration, and digital governance.
The mission operates on two main strategies:

1. Area-Based Development (ABD) – which includes retrofitting, redevelopment, and greenfield development, aiming to transform specific parts of the city into model zones of efficiency and sustainability.
2. Pan-City Initiative – which applies smart solutions such as e-governance, intelligent transport systems, energy management, waste management, and public safety across the entire city.

Smart Cities are envisioned as self-sufficient urban ecosystems, combining physical, digital, and social infrastructure. The mission emphasizes integrated planning — where sectors like transport, energy, water, sanitation, and environment are managed cohesively using technology. Cities like Pune, Surat, Bhopal, Indore, and Bhubaneswar have made remarkable progress with Integrated Command and Control Centres (ICCCs), which use real-time data from sensors, CCTV networks, and GIS systems to monitor traffic, waste, and civic services.

GIS-Based Town Planning:

Geographic Information System (GIS) has become a cornerstone of modern and smart urban planning in India. GIS integrates spatial and non-spatial data to visualize, analyze, and interpret urban growth, infrastructure, and environmental challenges effectively. Unlike traditional mapping, GIS enables multi-layered planning, where land use, transport, utilities, and environmental factors are digitally connected, helping planners make more informed decisions. GIS enables planners to analyse spatial data and visualize zoning maps, allowing them to assess the impact of zoning decisions on various factors, such as population density, transportation networks, and environmental conservation. By integrating data layers, such as land use, demographics, and infrastructure, GIS provides a comprehensive view that helps planners make informed zoning decisions. he importance of GIS in urban planning lies in its ability to integrate spatial, demographic, and environmental data for comprehensive analysis. Planners may easily combine many data sources.
the following are some GIS applications in urban planning:

- Population tracking (migration, demographics)
- Planning for new development or redevelopment
- Identification of natural or man-made disasters
- Examination of land use and zoning
- Examination of growth patterns
- Assets management and determination of how they are being used
- Assets management and examination of capacity issues
- Mapping of city infrastructure
- Mapping of community assets
- Mapping of community risks
- Integrating the data layers to ascertain demographics, socioeconomic status, and additional growth-influencing elements

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- Identifying concerns in the city, including infrastructure and crime

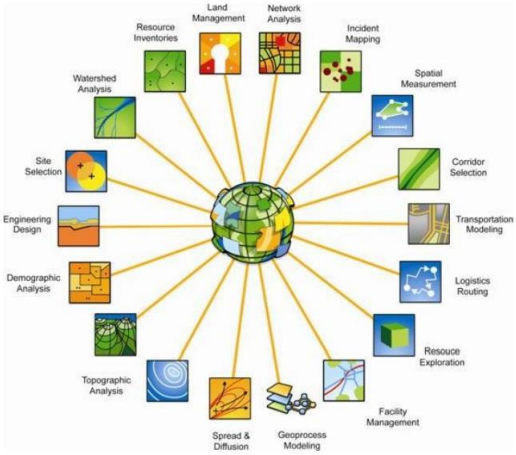

Image iii GIS Application

V. FUTURE PROSPECTS IN TOWN PLANNING

The future of town planning in India will increasingly emphasize integration of technology, sustainability, resilience, and social inclusivity. As urban populations grow and climate pressures intensify, Indian cities are shifting from simply expanding outward to becoming smart ecosystems where infrastructure, governance, and the environment are interconnected. Planning instruments such as Town Planning Schemes (TPS) and Transferable Development Rights (TDR) are also evolving to match these future needs. Mechanisms that allow land pooling, redevelopment of informal settlements, flexible zoning, mixed-use development and phasing of infrastructure are being refined so cities can expand in a compact, efficient manner rather than sprawl-out. For example, TDR is increasingly used in Indian cities to harness redevelopment potential with fewer new land acquisitions.

In the future, town planning in India is expected to become increasingly intelligent, adaptive, and technology-driven through the integration of advanced digital tools. Emerging technologies such as Digital Twin models will allow cities to create virtual 3D replicas that simulate real-time scenarios like traffic flow, energy consumption, and disaster risks, thereby improving decision-making and infrastructure management. The adoption of Artificial Intelligence (AI) and Machine Learning (ML) will further enhance predictive planning by analyzing massive datasets to identify urban sprawl, congestion patterns, and resource needs, ensuring more data-informed urban growth. Integration of Building Information Modelling (BIM) with GIS-based planning is revolutionizing both city-scale and building-level management by enabling seamless coordination across design, construction, and infrastructure networks. In addition, Remote Sensing and Drone Mapping technologies are providing high-resolution imagery and topographic data, facilitating accurate land surveys, environmental monitoring, and post-disaster assessments. The Internet of Things (IoT) and extensive sensor networks now support smart water, traffic, and waste systems, while Big Data dashboards and cloud- based platforms enable real-time monitoring and inter-departmental coordination within cities. Moreover, climate modelling and disaster resilience tools—including urban heat mapping and vulnerability assessments—are helping planners integrate sustainability and adaptation strategies into master plans. Modern visualization techniques such as Augmented Reality (AR) and Virtual Reality (VR) also empower both planners and citizens to visualize future projects interactively, fostering transparency and public participation. Collectively, these innovations mark a paradigm shift from conventional, static urban layouts toward dynamic, responsive, and sustainable urban ecosystems. For India, the integration of these technologies represents not just the evolution of smart cities but the dawn of intelligent and resilient urban planning, capable of addressing future challenges in population growth, resource management, and climate resilience.

VI. CONCLUSION

The evolution of town planning in India reflects a transition from ancient ingenuity to modern, technology-driven urban management. In the past, civilizations like the Indus Valley demonstrated advanced urban layouts with grid patterns, drainage systems, and spatial zoning, highlighting early attention to sanitation, functionality, and organized urban life. Subsequent eras, including the Mauryan, Mughal, and British periods, added layers of administrative efficiency, infrastructure, and aesthetic planning, laying the groundwork or modern urban forms. In the present, planned cities such as Chandigarh, Bhubaneswar, Gandhinagar, and Navi Mumbai exemplify structured growth with sector-based layouts, neighbourhood units, and integrated infrastructure. National initiatives like the Smart Cities Mission and AMRUT, along with GIS-based planning, IoT, and Integrated

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Command and Control Centres (ICCCs), have enabled real-time monitoring, disaster resilience, and data-driven urban governance, ensuring efficiency and inclusivity. Looking to the future, tools like Digital Twins, AI and ML analytics, BIM-GIS integration, drone mapping, and AR/VR visualization will enable predictive planning, scenario simulation, and adaptive infrastructure development. Climate modeling and resilience tools will further guide cities in sustainable growth. Together, these innovations mark a shift from static city layouts to dynamic, intelligent, and responsive urban ecosystems, ensuring that India's urban landscapes are sustainable, resilient, and citizen-centric.

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