Edge Cities: Rise of the Edge Cities in the Bangalore

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Abstract
The research illustrates the cumulative study of, the concept of edge cities which has become a new settlement model focused on decentralisation of the heavily dense metropolitan areas. Edge city is an area on the outskirts of an existing urbanised area or suburban area, with a concentration of commercial, corporate, and institutional facilities due to population (article-Outlook of an Edge City). Intention of this research paper is to share the summary of understanding of Edge Cities and Edge Cities trends in the Bangalore city.

Keywords: Edge Cities, Urban edges, Urban Sprawl, Evolution of edge cities in Bangalore, triggers of the edge cities in Bangalore, Parameters of the edge cities growth, Case Study of edge city project, Bangalore, Conclusion of the edge cities.

Introduction

Edges in urban areas are transforming. They are shifted from historic places into areas of creative opportunity for Urban design and Architecture, where the new innovative digital economies that are creating a convergence in Place making in urban design is a people-centered approach to creating vibrant, functional, and meaningful public spaces by involving the community in their planning, design, and management, focusing on social connection, Where it transforms underutilized areas into active, welcoming places for people to gather, interact, and feel a sense of ownership, emphasizing human-scaled environments over car-centric designs.

Formation of cities in urban design involves blending architecture, planning, and landscape to create livable, beautiful, and functional urban spaces focused on human experience, sustainability, and identity, by integrating green spaces, efficient transport, mixed uses, and distinct public areas like parks and squares, all while respecting the natural environment and ensuring social equity.

Source: *https://www.thenatureofcities.com/TNOC/2018/06/10/city-making-maker-city-edge-new-center/*
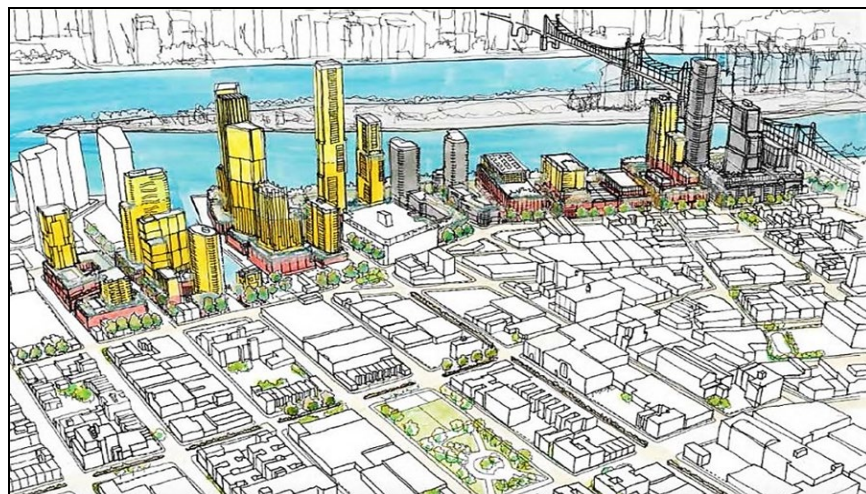
Fig 1: Edge city illustration

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Urban Edges: Urban edges plays a crucial role in city design and ecological balance which helps to manage urban expansion, preserve green spaces, and reduce the impact of human activities on natural habitats. The urban fabric which has the voids, "messed up" sections, interstices, leftover pieces, polluted or forgotten areas; sites along waterfronts, highways, rail lines offer the greatest challenges in cities today. Edges also offer the greatest opportunity today—for innovative architectural and urban design and the on-going transformation of cities in the 21st century.

1. Edge Cities

Source: *Example of an Urban Sprawl_https://archive.curbed.com/2019/2/1/18205869/city-growth-urbanization-sprawl*

Fig 2: Image of edge city example, Lagos, Nigeria

An edge city is a concentration of business, shopping, and entertainment outside a traditional or central business district, in what had previously been a suburban, residential or rural area.

The term was popularized by the 1991 book *Edge City: Life on the New Frontier* by Joel Garreau, he has established its current meaning Garreau argues that the edge city has become the standard form of urban growth worldwide, representing a 20th-century urban form unlike that of the 19th-century In Other terms for these areas include *suburban activity centres*, *mega centers*, and *suburban business districts*. These districts have now developed in many countries.

Edges cities are seen as strategies for city expansion and urban growth, as regards the traditional downtown or central business district of an urbanized area. They are also referred to as mega centers and settlement networks. They are surrounded by the cities that exist on the fringes of living larger cities, acting as regional hubs for recreation, business, or other commercial activities. There has been a context between Urban sprawl and edge cities on the grounds of definition and appropriateness, which one suites and/or better describes the event, and asides edge cities, other concepts of urban models such as central place theory, gateway city, growth poles, corridor city, and center-periphery models exist. India's edge cities are vibrant, sprawling suburban hubs like Noida (near Delhi), Gurugram (near Delhi), and areas around Bangalore, Pune, and Hyderabad, characterized by massive office parks, retail centres, residential zones, and auto-centric designs near major highways, evolving from traditional city centres into significant economic and lifestyle destinations.

a) **Growth of Outer-City Activity Zones in Edge cities:** Edge cities grows near major urban infrastructural facilities like airports, industrial areas far from the central district, and intersections of highways leading out of the central area. Which is called "Technoburbs" they feature some activities and amenities serving the larger population. They are also a result of urban sprawl. Edge cities consist of mid-level infrastructures; hence they are not full but are still under the regulation of the main city.

b) **Parameters Influencing the Rise of the Edge Cities**
- **Economic Decentralization:** Movement of jobs from central business districts (CBDs) to suburbs.
- **Transportation Infrastructure:** Highways, ring roads, major intersections, and transit corridors that attract businesses.
- **Availability of Land:** Large, affordable suburban land parcels suitable for office parks, malls, and housing.
- **Population Growth in Suburbs:** Residential expansion creates demand for commercial and business centers.

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- **Growth of Service and High-Tech Industries:** Industries that prefer flexible, lower-cost suburban office space.
- **Automobile Dependency:** Car-oriented development encourages suburban commercial hubs.
- **Urban Congestion and High CBD Costs:** High rents, traffic, and congestion push firms to the periphery.
- **Zoning and Land-Use Policies:** Suburban municipalities that encourage commercial development.
- **Rise of Shopping Malls and Retail Complexes:** Retail anchors often evolve into full edge cities over time.
- **Telecommunications and Digital Connectivity:** Allows businesses to operate effectively outside the CBD.

c) **Urban Growth in Edge Cities:** Is "a global phenomenon, which is caused by the result of various ecological, social and economic processes occurring in all natural and human structures" (Lefteris, p1), Urban growth is a physical urban expansion and functional changes, as it refers to the changes that occur in the surroundings (transformation from open areas to urban areas) and this leads to a change in the type of land uses, as efficiency and the surroundings are two of the main elements of the urban system (cheng, p3).

The city growth is the transition from simple to complex economic organizations that is, the transition from an economy dependent on Labor and primary production to an economy dependent on industry, management, trade, and Services, and in a simpler sense is the transition from a subsistence economy to a market economy
3-semi-urbanization of the edges of the city and its outskirts, as it is considered the most spatial indicator of such growth
- The decline of the central city is an indicator of the historical origins of growth
- The emergence of the outskirts and edges of the city

- Competition and integration with the city center and its functions
d) **Urban Sprawl in the Edge Cities:** as urban growth begins to crawl, expand and move towards empty land to fill it, as the city grows from its outskirts by adding parts to it, then the process of qualitative development of the place begins (complexity and development of events), so expansion and spread is the first step to urban growth, and sudden urban growth occurs as a result of the economic growth of the region accompanied by an increase in the population. And contemporary urban growth occurs as a result of interrelated problems of place dynamics (Batty, 1991, p1).
e) **Continuity of the Edge Cities:** City growth includes individual movements that can be measured by land uses, density, amount of work, and the type of change in terms of speed, slow, gradual, or sudden, this depends on the level at which the change occurs, so if it is at the level of formal spatial patterns, the change is slow, but if it is at the level of internal events and activities, the change is clear and rapid, as the change in the formal patterns of the city is continuous and occurs at a slow level, as the shape and the formal pattern follows a specific rule in the growth period, which is growing from bottom to top, and this is called on "fractional patterns," the city continues to grow by creating parts over time Until you reach the next stage of growth and(Bengston, Fletcher, *et al*., 2004, p272

f) **Types of Edge Cities**
Garreau identified three distinct varieties of the edge city phenomenon:
- Boomburbs or "boomers" – the most common type, having developed incrementally but rapidly around a shopping mall or highway interchange, (like GIFT City in Ahmedabad, IT/manufacturing in Coimbatore, logistics in Kochi, education/governance in Lucknow/Bhubaneswar)

Source: https://www.sobha.com/blog/gift-city-gandhinagar-smart-city-living-experience/

Fig 3: GIFT city, Ahmedabad

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- **Greenfields:** Originally master-planned as new towns, generally on the suburban fringe, for example (like Aurangabad Industrial City, Amravati, Andhra Pradesh, Dholera Special Investment Region (SIR), Gujarat)

Source: https://hindi.goodreturns.in/news/2019/09/08/first-smart-industrial-city-inaugurates-in-aurangabad-009554.html

Fig 4: Aurangabad industrial city

Uptowns: An older city, town, or satellite city, upon and around which a major regional hub of economic activity rises, for example (like Gurugram, Noida, Whitefield (Bengaluru), Hitec City (Hyderabad), and Wakad, Pune)


Source: https://www.incredibleindia.gov.in/en/haryana/gurugram

Fig 5: Gurugram city, Noida

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Table 1: Parameters of Edge cities

Category	Parameters of Edge cities characteristics
1. Size & Scale	• Large office space (≈5 million sq ft or more) • Significant retail space (≈600,000 sq ft or more)
2. Employment Structure	• More jobs than bedrooms • Dominance of office, service, and tech-sector employment • Large daytime population compared to nighttime population
3. Function & Role	• Serves as an independent economic hub • Provides workplaces, shopping, entertainment, hotels, restaurants • Reduces reliance on the central business district (*CBD*)
4. Location & Accessibility	• Situated at major highway intersections, ring roads, airport corridors • Located outside the traditional downtown • Highly accessible by automobile
5. Developmental History	• Rapid growth within the last 30–50 years • Transition from suburban areas, malls, or highways into urban centers
6. Land Use & Urban Form	• Auto-oriented layout (parking lots, wide roads) • Low-to medium-density built environment • Mixed but dispersed land uses (offices, retail, hotels)
7. Social & Demographic Patterns	• Attracts commuters from many directions • Regional rather than local significance • High diversity of daily users (shoppers, workers, visitors)
8. Governance & Planning	• Often lacks a single unified local government • Development driven by private developers • Local zoning encourages commercial growth

Source: Generated by the Co-author using Microsoft power point

## 2. Why is Bangalore Developing So Fast?
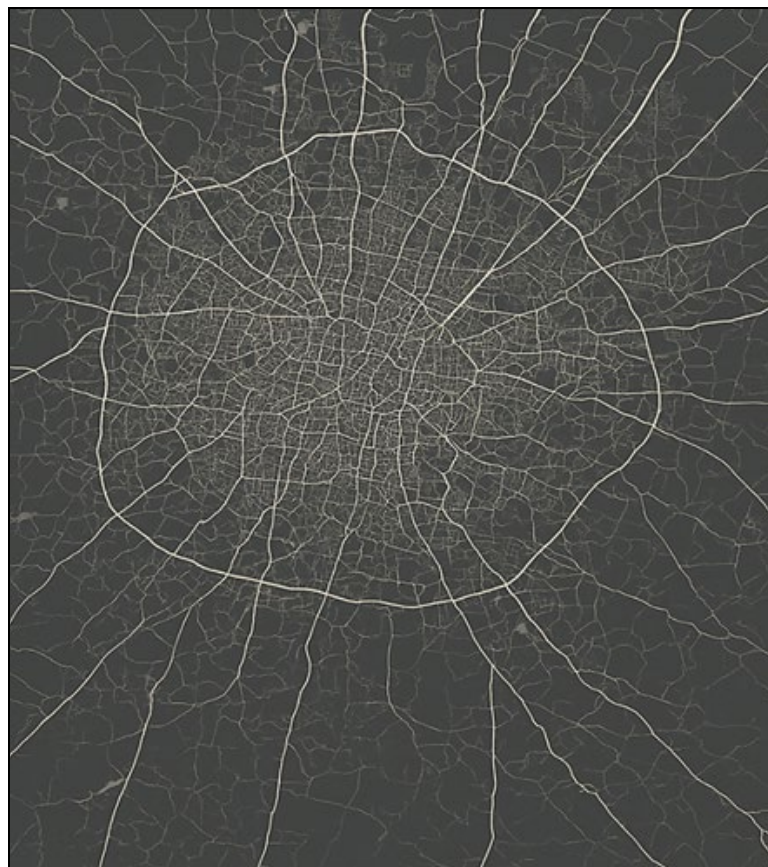
Source: Generated by the Co-author using Photoshop

Fig 6: Bangalore city fabric

The city's rapid transformation into one of India's most dynamic urban centres is driven by a confluence of technological innovation, infrastructure expansion, residential demand, and progressive governance. These factors collectively enhance its appeal for professionals, investors, and residents.

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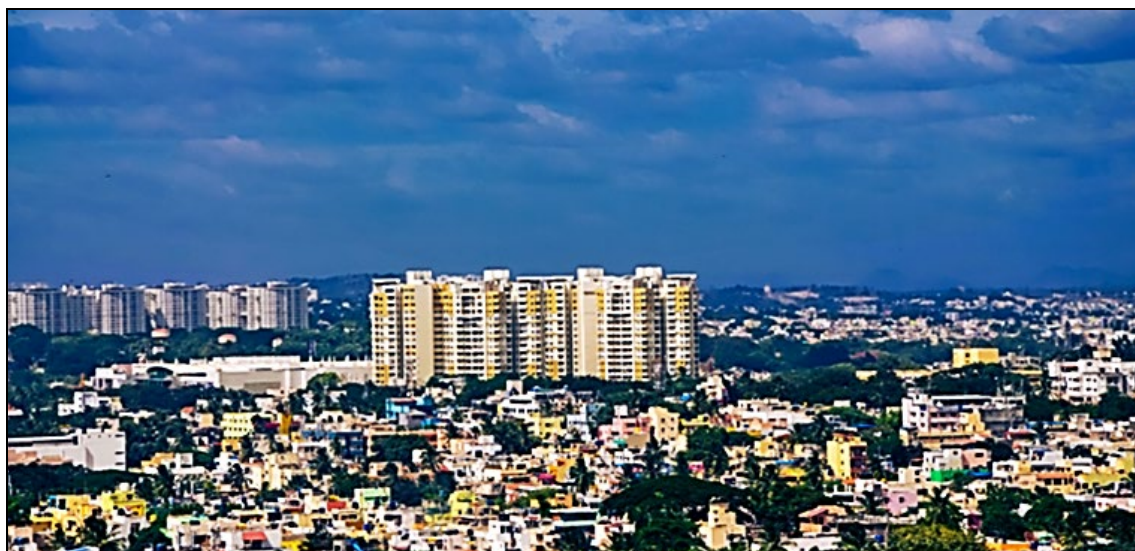
Fig 7: Example of skyline of the Edge city, Bangalore

3. Evolution of Edge Cities in the Bangalore City
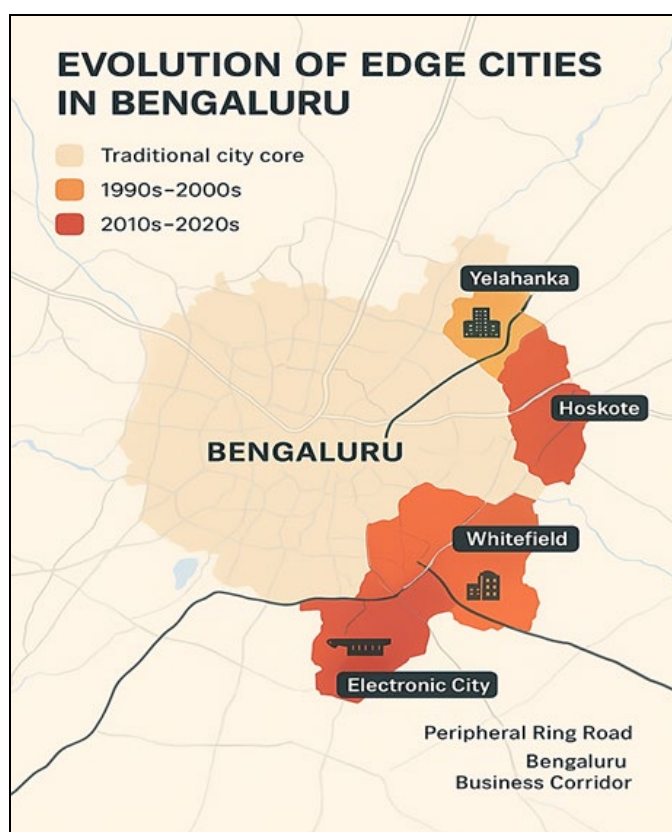
Fig 8: *Graphical representation of Edge cities evolution in Bangalore city*

1. Pre-IT Era (Before 1990) — City Core Dominance
- Bengaluru was traditionally a garden city with a compact urban core and planned residential neighbourhood. (epcworld.in)
- Suburbs like Puttenahalli were rural villages until the 1970s–80s, urbanizing slowly as Bangalore expanded.

2. IT Boom & Suburban Growth (1990s–2000s)
Rise of Technology Hubs
- Electronic City became one of the first major peripheral employment centres when numerous IT and tech companies set up campuses there. ARTHVIDYA

- Whitefield, initially a quiet settlement, transformed into a major IT and residential hub following the establishment of IT parks (like ITPL).

How This Sparked Edge City Growth
- Tech parks pulled in professionals from across India, increasing demand for housing, retail, and social infrastructure in nearby areas.
- Suburbs along Outer Ring Road (ORR) — such as Bellandur, HSR Layout, Sarjapur Road, Kadubeesanahalli — began evolving into mixed residential and commercial zones.

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3. Expansion & Diversification (2010s–2020s)
Outer Ring Road as Growth Corridor

- The ORR corridor became a major edge city belt as both offices and high-end housing developed here.
- Areas such as Bellandur experienced significant real estate and job growth due to strategic location and connectivity.

Suburbs Turning into Urban Nodes

- Thanisandra (north) saw increases in professionals moving in due to proximity to new airport routes and infrastructure.
- Jigani in the south became an industrial and employment centre linked with Electronic City and other industrial areas.

4. Current & Emerging Edge Cities (2020s–Present)
Maturing Peripheral Hubs

- Sub centres like Whitefield, Sarjapur Road, Bellandur, Jigani, and Thanisandra are now self-sustaining urban clusters — with offices, housing, retail, and services — not just commuter suburbs.
- These developments show many traits of edge cities:
- Economic activity outside core
- Mixed land use and employment concentration
- Growth along transport corridors

5. Infrastructure & Future Growth Trends
Transport & Connectivity

- Massive projects like the Bengaluru Business Corridor (Peripheral Ring Road) aim to enhance connectivity between peripheral hubs, reinforcing their growth as urban centres.

Urbanisation Pressures

- Rapid urban sprawl has caused rural villages on the periphery to urbanize quickly — with development outpacing infrastructure in some cases

4. Edge Cities Growth in the Bangalore City
India's Silicon Valley is expanding rapidly, and knowing where growth is happening can turn a smart home purchase into a powerful investment.
Growth in Bangalore has exploded, due to by vision-driven corridors that are shaping its future. Every skyline tells a story of evolving infrastructure, growing employment hubs, and rising property potential. The best developing localities in Bangalore are more than just addresses; they are future-ready destinations.
Urban Sprawl: (also known as suburban sprawl or urban encroachment) is defined as "the rapid expansion of the geographic extent of cities and towns, often characterized by low-density residential housing, single-use zoning, and increased reliance on the private automobile for transportation".
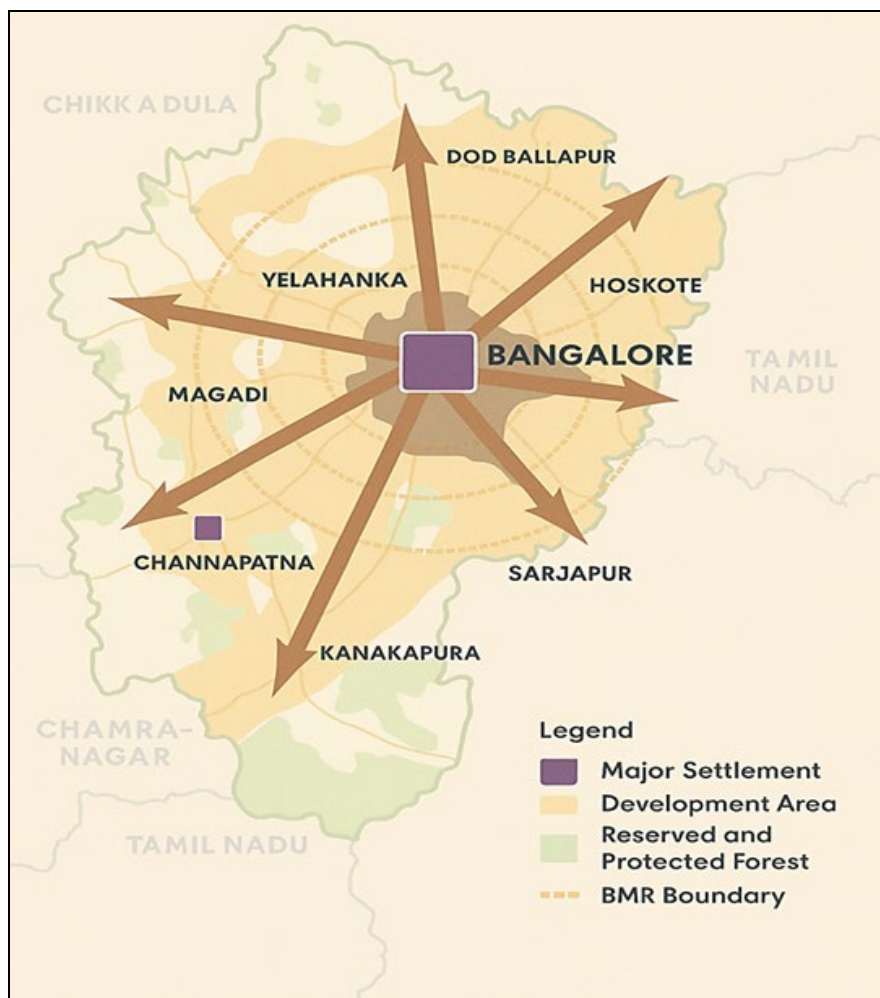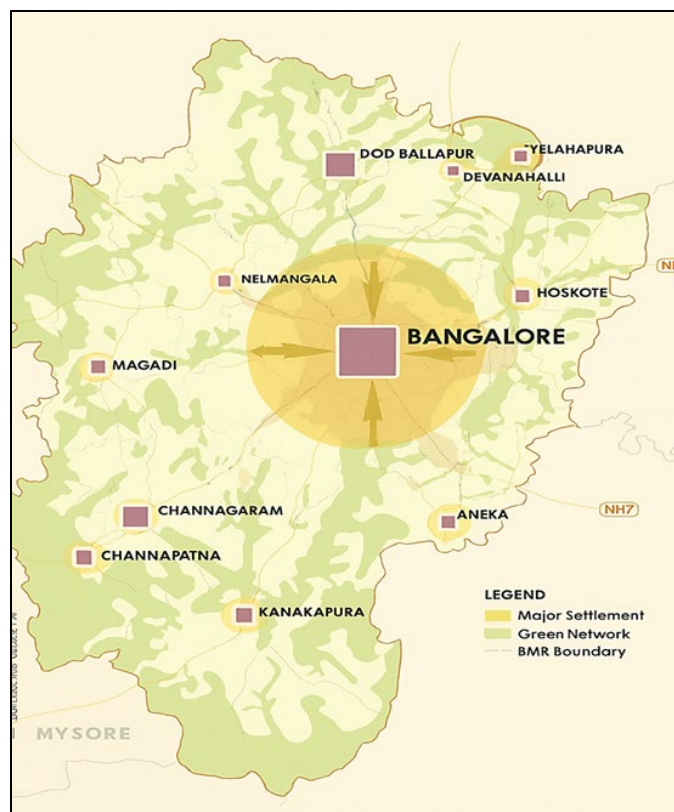

Source: Generated by the Co-author using Photoshop

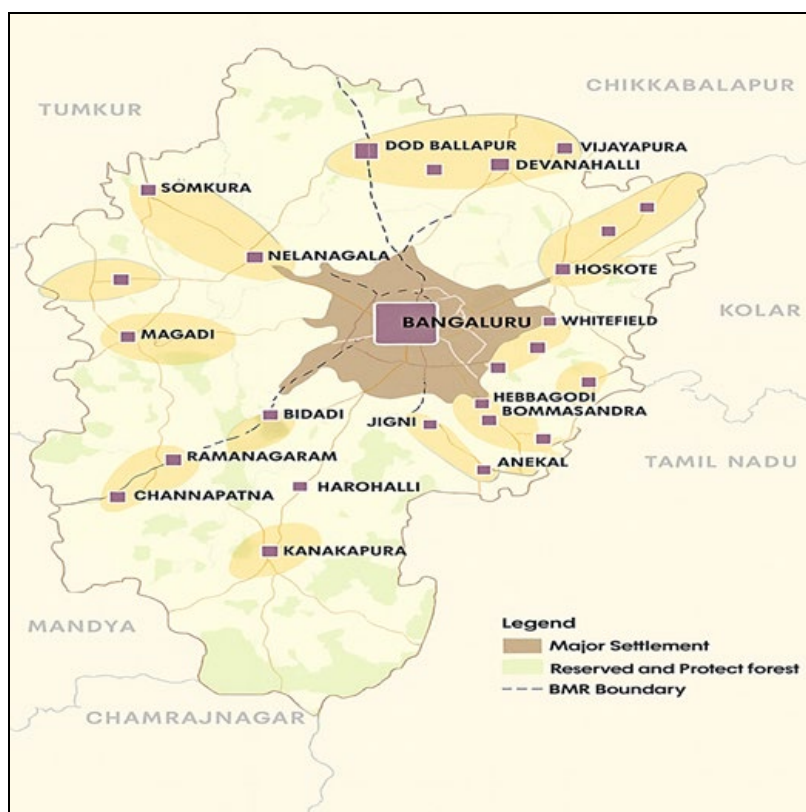**Fig 9:** Urban sprawl of the center core of the city triggering the outer periphery areas

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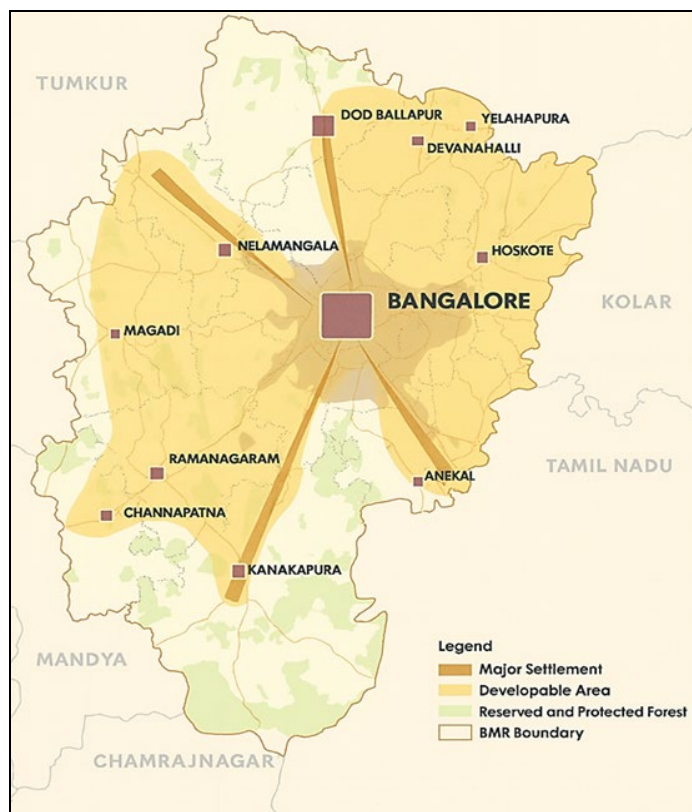
Fig 10: Investment led growth of the city

Fig 11: Green network, growth of the city

Fig 12: Urban clusters, growth of the city
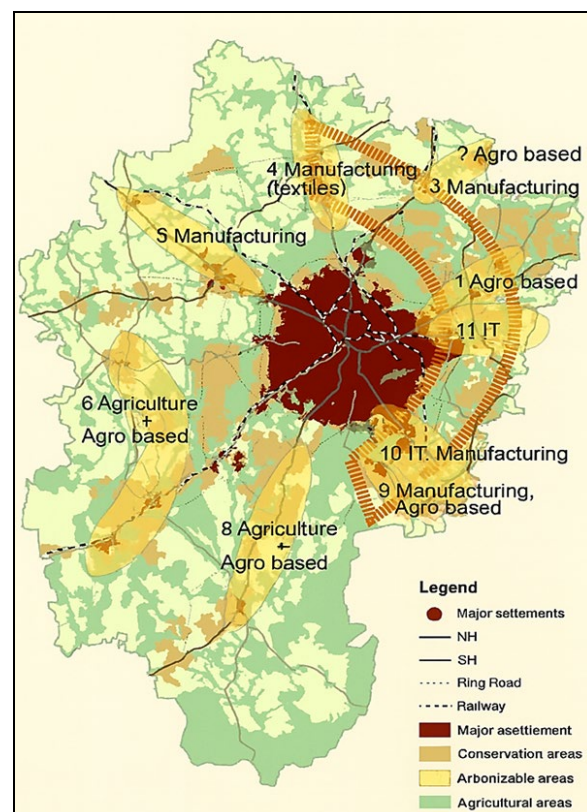
Fig 13: Urbanization trend, growth of the city

Key Triggers of Development
- **IT Sector Growth:** The primary driver was the influx of global and national IT/ITeS companies, creating massive employment opportunities and attracting a skilled workforce from across India.
- **Government Support & Liberalization:** Strategic government policies, subsidies, tax incentives, and the

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1991 economic reforms attracted significant investment and eased business operations.

- **Infrastructure Development:** Projects like the Electronic City Elevated Expressway and the Namma Metro expansion were crucial in improving connectivity to the city center and facilitating growth in these areas.
- **Availability of Land/Cost:** The initial availability of land in the periphery, compared to the congested city center, made these areas attractive for large-scale development.

**Global Tech Village Park" is officially known as Sattva Global City**

The "Global Tech Village Park" is officially known as Sattva Global City (formerly Global Village Tech Park). It is a massive software technology park located in Kengeri, off Mysore Road in Bangalore. It is an established commercial hub, and its development and surrounding areas are addressed within the larger planning framework of the Revised Master Plan for Bengaluru 2031 (RMP 2031), the primary statutory document governing urban development in the city

Case Study
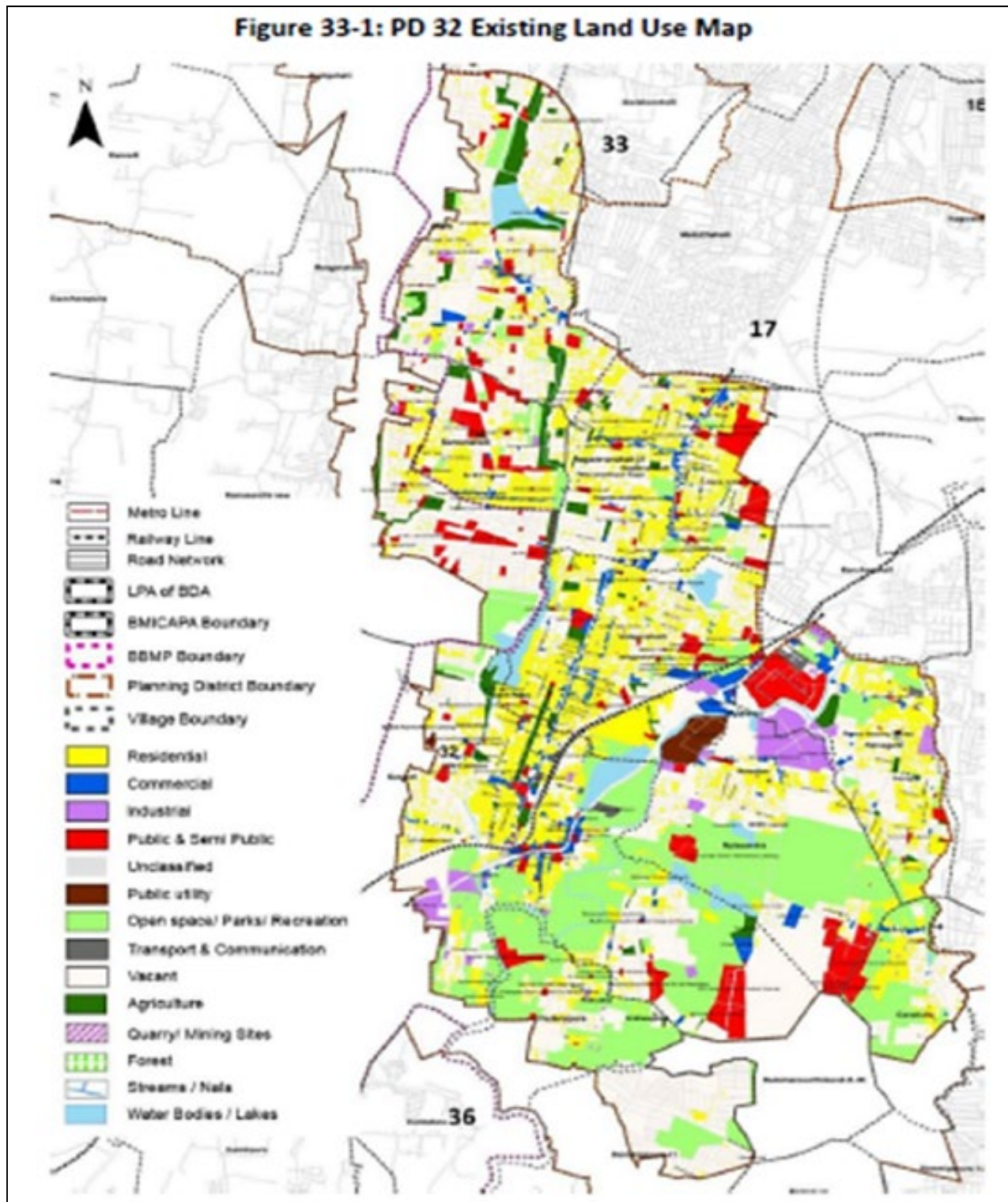
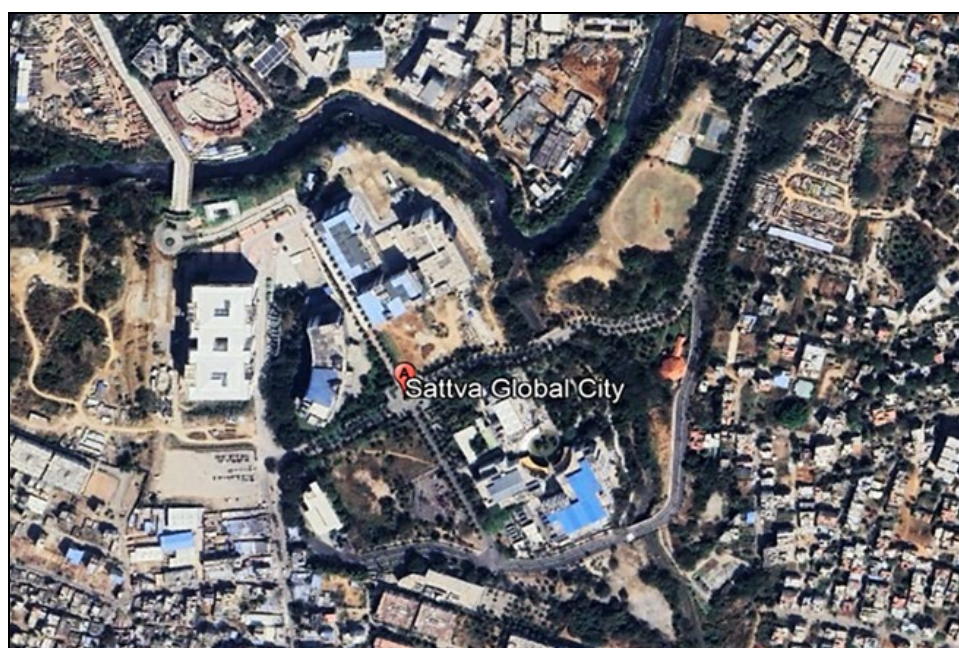*Source: Revised Master Plan for Bengaluru 2031 (RMP 2031),*

Fig 14: Existing Kengeri planning district map,

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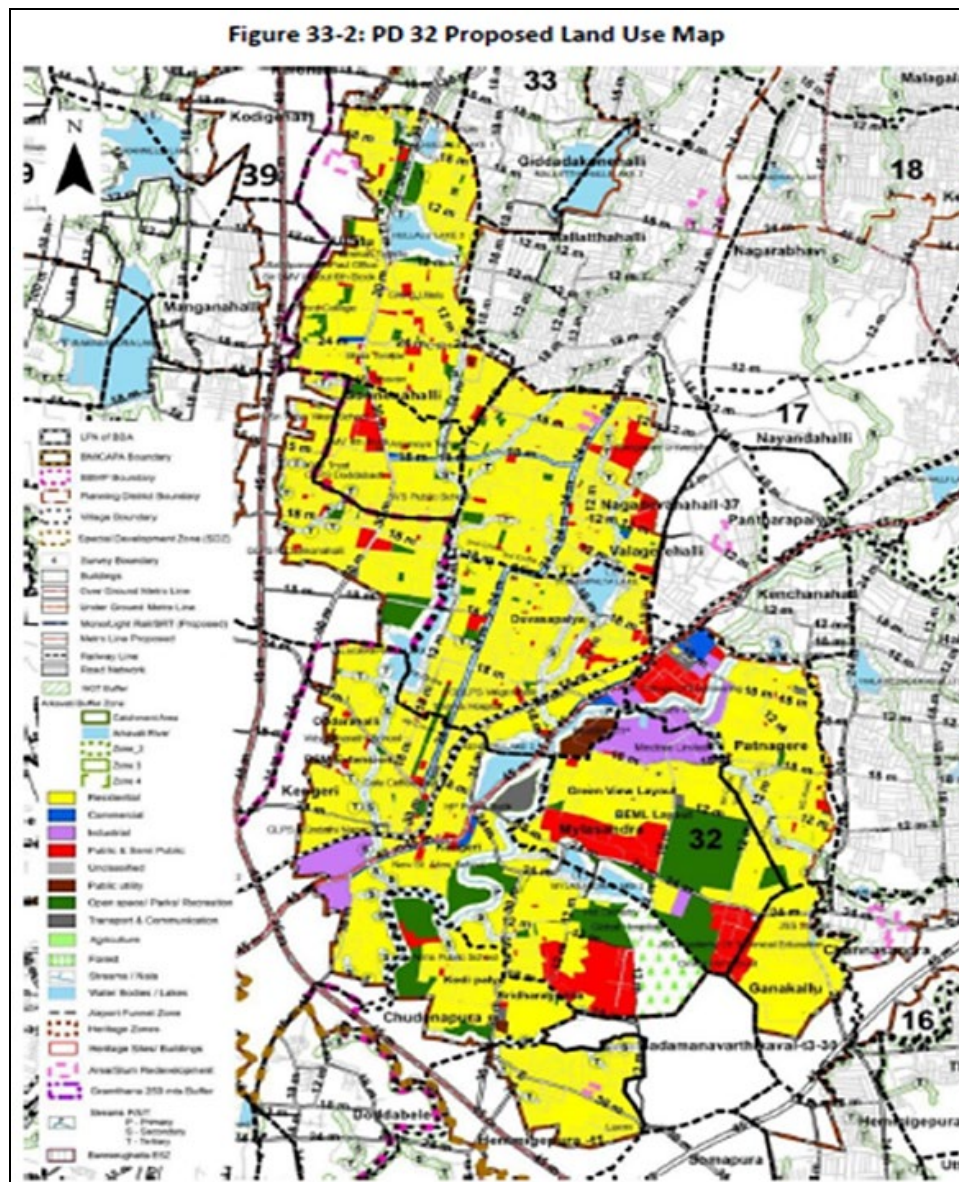
Source: Revised Master Plan for Bengaluru 2031 (RMP 2031),

Fig 15: Proposed Kengeri planning district map,

Source: Extracted image by Co-author through Google earth pro

Fig 16: Image of the aerial view of the Sattva global city tech park RR Nagar, Kengeri

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Sattva Global City (formerly Global Village Tech Park) — Kengeri

Fig 17: Image of the Sattva global city tech park, RR nagar, Kengeri

Global Village Tech Park, now known as Sattva Global City, is a prominent software technology park in Bengaluru, India, recognized as one of the largest business parks in the city by land area. Spanning 78.3 acres in Kengeri off Mysore Road, it provides approximately 12.1 million square feet of leasable office space and maintains a committed occupancy rate of 81.2% as of March 31, 2025.

History
Early Development
The Global Village Tech Park was developed by Tanglin Developments Ltd., the real estate arm of Coffee Day Enterprises Ltd. (the parent company of the Café Coffee Day Group), beginning in the early 2000s as part of efforts to capitalize on Bengaluru's burgeoning information technology sector [13, 14]. This initiative aligned with the city's IT revolution, which saw rapid growth in software services and exports during the period, driven by liberalization and the establishment of global capability centers [15]. Construction of the park commenced to create a dedicated software technology park, with initial phases focusing on modern office infrastructure to support the IT boom that transformed Bengaluru into India's Silicon Valley [16]. The project received approval for Special Economic Zone (SEZ) status under the Tanglin SEZ designation, enabling tax incentives and streamlined operations to attract international tech firms [17]. Initial phases were completed by the mid-2000s, with the park launching operations around 2005, marking its entry as a key hub for software development and IT services

Location and Accessibility

Fig 18: Image of the Sattva global city tech park entrance, RR nagar, Kengeri

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Global Village Tech Park, now known as Sattva Global City, is situated in the Kengeri area of Rajarajeshwari Nagar, Bengaluru, Karnataka, India, with its primary address at RVCE Post, Mysore Road (NH-275), Mailasandra [5, 6]. The park lies adjacent to the Pattanagere metro station on the Green Line of the Namma Metro network, providing direct and efficient public transit access [1]. It is positioned behind the Rashtreeya Vidyalaya College of Engineering (RVCE), enhancing its integration with nearby educational hubs [7].

The tech park offers excellent connectivity to Bengaluru's broader infrastructure, located approximately 20 minutes from the Outer Ring Road by road, facilitating quick links to the city's IT corridors and central areas [1].

It is in close proximity to the Kengeri bus terminal (approximately 2 km away), which serves as a major hub for BMTC bus services connecting to various parts of Bengaluru, including Yeshwanthpur and Majestic, with local bus stops just 50 meters away [6, 8]. Rail access is available via Kengeri railway station, about 4 kilometers away on the Bengaluru-Mysore line, while cab services and auto-rickshaws are readily available for last-mile connectivity [7].

Road access is streamlined through Mysore Road (NH-275), a key national highway linking to Mysuru and other southern routes, with the Kempegowda International Airport approximately 51 kilometers north

Facilities and Infrastructure

Source: https://sattvagroup.com/commercial/sattva-global-city/

Fig 19: Image of the Sattva global city tech park, RR nagar, Kengeri

Buildings and Amenities

Global Village Tech Park, now known as Sattva Global City, comprises multiple modern towers designated as Special Economic Zones (SEZs), providing a total leasable area of 12.1 million square feet dedicated to Grade-A office spaces [1]. These structures are designed to support professional environments with flexible layouts suitable for technology and business operations [6]. The park offers a range of user-focused amenities to enhance occupant experience and productivity, including an indoor sports facility equipped for activities such as table tennis and gym workouts [29]. It provides 100% power backup with a capacity of up to 20 MW to ensure uninterrupted operations, alongside modern infrastructure featuring energy-efficient lighting [1]. Ample parking facilities, including reserved and visitor spaces with boom barriers, are available, complemented by 24/7 security measures such as CCTV surveillance and fire-fighting equipment [11, 5]. Office spaces within the towers come in both furnished and unfurnished rental options, catering to diverse tenant needs [30]. Key features include conference rooms for meetings, on-site cafeterias and food courts offering multiple F&B outlets, and robust connectivity infrastructure optimized for high-tech and data-intensive operations [27, 31]. Additional recreational amenities, such as an amphitheatre, basketball court, volleyball court, cricket ground, and football ground, promote employee well-being [27].

Sustainability and Technology Features

Global Village Tech Park, now known as Sattva Global City, incorporates several green initiatives aimed at resource conservation and environmental responsibility. The park features rainwater harvesting systems to capture and store runoff for non-potable uses, reducing reliance on municipal water supplies. Additionally, advanced water treatment plants process wastewater on-site, enabling recycling for landscaping and flushing, while a hydro-pneumatic system ensures efficient distribution throughout the campus.

These measures align with broader sustainability goals of the developer, Salarpuria Sattva Group, which emphasizes water management in its projects [1]. Energy efficiency is prioritized through the integration of energy-efficient lighting fixtures and systems across the buildings, contributing to lower operational costs and reduced carbon emissions. The park benefits from a robust power infrastructure, including up to 20 MW of supply and 100% backup via diesel generators, ensuring uninterrupted operations while supporting energy optimization. Although specific solar power integration details for this site are limited, the developer's portfolio includes offsite renewable energy systems like solar PV panels in other projects, reflecting a commitment to broader energy reduction strategies

Tenants and Operations
Major Occupants

Global Village Tech Park, now known as Sattva Global City, primarily hosts tenants in the information technology services, software development, and global capability centers sectors, fostering an ecosystem for multinational corporations and specialized firms [36, 37]. Among the prominent current occupants is LTIMindtree, which has a major campus in the

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park following the 2022 merger of L&T Infotech and Mindtree; the site previously served as the headquarters for Mindtree since the park's early development phase in the early 2000s, establishing it as an anchor tenant that attracted subsequent IT firms [38, 39]. Other key tenants include Accenture, a global professional services company with a significant delivery center focused on consulting and digital transformation; Mphasis, specializing in IT infrastructure and application services; NTT Data, providing data center and IT solutions; Tietoevry (formerly TietoEVRY), offering software and digital engineering services; Northern Trust, operating a global capability center for financial services; Textron, with operations in aerospace and industrial sectors; Sonata Software, focused on IT consulting and software engineering; Texas Instruments, maintaining semiconductor design and development facilities; and Capgemini, delivering engineering and technology services [36, 37, 40].

Economic Rule
Economically, the park contributes to Bengaluru's GDP through direct and indirect job creation in high-skill sectors, talent aggregation, and infrastructure synergies with nearby educational institutions like RV College of Engineering. Its 2019 acquisition by Blackstone and Salarpuria Sattva for approximately Rs 2,700 crore highlighted its strategic value, spurring further real estate investments and urban development along Mysore Road [44]. In March 2025, Sattva Global City was included in the Blackstone-Sattva joint venture's filing for a Rs 7,000 crore real estate investment trust (REIT) initial public offering, Knowledge Realty Trust, underscoring its ongoing significance [43]. By prioritizing sustainability features like rainwater harvesting and energy-efficient systems, it also promotes long-term economic resilience amid growing demands for green commercial spaces.

Summary of the Project Review
Sattva Global City is one of the most significant economic anchors in the western periphery of Bengaluru. Spread across a large integrated campus near Kengeri, it accommodates multiple national and international IT, technology, and knowledge-based companies.
Its presence has created a high concentration of employment opportunities outside the traditional city core, which is a defining characteristic of edge-city development. The tech park stimulates:

- Daily worker inflow, increasing functional importance of Kengeri
- Supporting commercial and residential growth in adjacent neighborhoods
- Improved infrastructure demand, especially transport corridors and metro connectivity
- A shift from a suburban to a multi-functional urban node

In urban-theory terms, Sattva Global City acts as a peripheral employment magnet, positioning Kengeri as a developing secondary business district (SBD) or edge city within the Bengaluru Metropolitan Region.

Conclusion of the Edge Cities in the Bangalore City: A Dynamic and Complex Landscape
The evolution of Bangalore's edge cities is a testament to the city's immense economic dynamism and population growth. What were once peripheral towns or mere cow pastures have, in less than three decades, become vibrant, self-contained urban centers with their own unique characteristics and economies. This rapid, often unplanned, sprawl has not been without its challenges, leading to significant pressure on existing infrastructure, traffic congestion, and environmental concerns.
However, the continuous push for planned development, improved transit options, and integrated townships suggests an ongoing maturation of these areas. The city is transitioning from a single core to a complex web of interconnected urban nodes, each contributing to the multifaceted personality of modern Bengaluru, balancing its traditional roots with the demands of a globalized, high-tech future.

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