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From Silk City to Smart City: A Sustainable Urbanization Model in Bhagalpur

Brajesh Kumar

Research scholar, University Department of Economics, Munger University, Munger

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ABSTRACT

Bhagalpur, also known as the "Silk City of India," is in the midst of a massive urban transformation process driven by the Smart Cities Mission launched by the Government of India in 2015. Chosen in 2016, the city is one of the increasingly many examples of how cities can be developed within new frameworks, while preserving their historical and cultural values. The development strategy in Bhagalpur is designed based on two approaches: Area Based Development (ABD) and Pan-City development initiatives that encourage balanced, inclusive and sustainable urban development. The main thrust of the Area-Based Development model is to improve key urban infrastructure in specific areas. This is to improve the roads, redevelop riverfront along the Ganga, conserving heritage assets and enhancing basic services like water supply and sanitation. Simultaneously, Pan-City programmes work on improving governance and service provision using digital tools, such as the integrated monitoring system, intelligent traffic management, and new waste management systems. The overall implementation is carried out by Bhagalpur Smart City Limited (BSCL) which is established as a dedicated organization to organize the planning, financial management and implementation of the projects. It has been invested more than ₹1,300 crore and the city has seen tangible changes in mobility, administrative efficiency and tourism. Despite these challenges and the

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environmental issues and concerns they pose, Bhagalpur is on its way to becoming a more sustainable, efficient and economically dynamic city.

1. Introduction

Indian urbanisation has been rapid and has led to problems in urban infrastructure, urban governance, urban environment and urban service delivery. The Government of India launched the Smart Cities Mission, which aims to create efficient, liveable, and citizen-centric cities, to tackle these challenges.

The city of Bhagalpur in Bihar, which has a historical significance for the silk industry and is based on agriculture, was added in the second phase of the Smart Cities Mission in 2016. The list of its partners shows its ambition to become a hub for growth in the region, given its cultural, geographical and economic strengths.

This change was managed well with the creation of a Special Purpose Vehicle (SPV) Bhagalpur Smart City Limited (BSCL). This institution provides for a coordinated planning, efficient use of funds and systematic implementation of projects.

Review of Literature-

- **Bhagalpur Smart City Limited. (2025).** ***Project status and progress report*****. BSCL.** This report provides detailed insights into the implementation of smart city projects in Bhagalpur. It includes information on planning, funding allocation, and execution status of various initiatives such as smart roads, riverfront development, and digital governance systems. The report reflects local-level progress and highlights the effectiveness of institutional mechanisms in project management.
- **Kundu, A. (2019). Urban development and smart cities in India: A critical assessment.** ***Economic and Political Weekly*****.** Kundu critically examines the Smart Cities Mission, focusing on issues of inequality, governance challenges, and uneven regional development. The study questions the effectiveness of area-based approaches and highlights the need for inclusive planning. It emphasizes that urban policies must address socio-economic disparities to ensure balanced and equitable urban growth.
- **Datta, A. (2018). The digital turn in postcolonial urbanism: Smart citizenship in India.** ***Transactions of the Institute of British Geographers*****.** This study explores how digital technologies shape urban governance and citizen engagement in smart cities. It examines the implications of ICT-based systems on participation, access to services, and surveillance. The paper provides a critical

perspective, highlighting both opportunities and concerns associated with technology-driven urban transformation in developing countries.

- **NITI Aayog. (2020).** ***Urban transformation in India: Smart cities and AMRUT*****. Government of India.** This report analyzes India's urban transformation through flagship programs such as Smart Cities Mission and AMRUT. It focuses on infrastructure development, service delivery improvements, and policy coordination. The study emphasizes sustainable urban planning, efficient resource use, and institutional reforms as key drivers of long-term urban growth and resilience.
- **World Bank. (2020).** ***India urbanization review: Fostering competitive, sustainable cities*****. World Bank Publications.** The World Bank report examines the challenges and opportunities associated with rapid urbanization in India. It highlights the importance of infrastructure investment, governance reforms, and economic competitiveness. The study emphasizes sustainable urban development, improved service delivery, and inclusive growth as essential components for building resilient and efficient cities.
- **Asian Development Bank. (2019).** ***India: Supporting smart urban services*****. ADB Publications.** This publication focuses on the role of smart technologies in enhancing urban service delivery in India. It discusses infrastructure financing, governance improvements, and environmental sustainability. The report highlights the importance of integrated planning and innovation in addressing urban challenges, particularly in rapidly growing cities undergoing structural transformation.

3. Planning Framework of Smart City Bhagalpur

3.1 Investment Structure

The development plan for Bhagalpur is supported by a total investment of approximately **₹1,309.3 crore**

Component	Allocation (₹ Crore)	Focus
Area-Based Development	1106.7	Infrastructure development
Pan-City Initiatives	202.6	ICT-based solutions
Total	1309.3	Integrated development

Source: Bhagalpur Smart City Limited (BSCL). (2016). *Smart City Proposal: Bhagalpur*. Government of India.

This table reflects the overall investment distribution with larger investments in Area Based Development and smaller investments in Pan-City initiatives, suggesting the emphasis is on infrastructure investments over systems of governance based on technology. Much of this (approx. 84%) goes towards infrastructure and the rest towards digital and governance solutions.

3.2 Vision Statement

Bhagalpur's long-term vision is to become a sustainable, economically thriving, and culturally rich city that embraces the past while moving forward. Key to this vision is its plans to revitalize its historic silk sector that plays a significant role in the local economy and identity, creating jobs. Concurrently, there is a strong focus on building up the urban infrastructure and services, such as transport, water supply, sanitation and public amenities, to improve the quality of life for the urban population. The development strategy also focuses on the development of tourism, the revitalisation of the riverfront along the Ganga, the conservation of heritage sites and the creation of new streams of income. Moreover, the transition to digital governance processes is considered a key milestone in enhancing transparency and efficiency in urban governance processes and involving citizens in them, which would in turn support sustainable and inclusive development in the long term.

3.3 Strategic Approach

Area-Based Development (ABD)

Converting identified areas into well-designed model urban areas through upgrading infrastructure, increasing quality of life, optimizing land usage and establishing replicable urban development models within the city.

Sustainable growth based on smart roads, riverfront revital, enhancing public utilities such as water and sewerage and protection of historical and cultural heritage.

Enhancement of slum conditions and housing infrastructure by providing better housing, sanitation and basic services and inclusive planning to improve the socio-economic condition of slum dwellers.

Pan-City Initiatives

Development and implementation of ICT based governance processes to boost efficiency, transparency and accessibility of public services, thus enhancing citizens-administrative authorities interaction.

Real-time monitoring via centralized command systems ensures prompt decision making, higher service quality, better emergency response and urban infrastructure and resource management.

The concept of smart traffic management and waste management is focused on minimizing traffic jams, optimizing traffic flow, making urban areas more environmentally friendly, and keeping city streets cleaner and tidier throughout the city.

4. Funding and Resource Allocation

The financial structure is based on multiple sources:

Source	Contribution
Government of India	~₹500 crore
Government of Bihar	₹465 crore
Urban Local Body	Partial
PPP & Convergence	Additional
User Charges	Operational sustainability

Source: Ministry of Housing and Urban Affairs. (2015). *Smart Cities Mission: Statement and Guidelines*. Government of India.

Funding and Resource Allocation Table

This table describes diverse funding sources such as central and state governments, local governments and PPP, and the financing model comprises of a mix of funding sources ensuring financial sustainability and effective implementation of the smart city projects. Transparency and efficient allocation of funds is achieved through BSCL.

5. Major Projects and Implementation Status (2025–2026)

Key Projects

Project	Cost (₹ Crore)	Status	Features
ICCC	234.71	Completed	Surveillance & monitoring

Smart Roads	299.30	Completed	Mobility improvement
Barari Ghat	169.25	Ongoing	Tourism development
Other Projects	Included	Mostly completed	Schools, ITMS, SWM

Source: Bhagalpur Smart City Limited (BSCL). (2025). *Project Status and Progress Report*. BSCL.

Major Projects and Status Table (2025-2026)

Completed projects (ICCC, smart roads etc.) are summarized in this table along with their costs and the status of their implementation, with on-going projects (riverfront beautification etc.) also identified. The table summarises data on the demographic, infrastructure and urban conditions, as well as the need for planned development intervention, such as population, population density, water supply, sewerage, and transport.

6. Key Achievements

- Centralized monitoring system allows real time governance, coordination, better decision-making and effective delivery of services.
- Enhanced traffic flow due to smart infrastructure on road, which reduces traffic congestion, travel time and improves the overall efficiency of urban mobility.
- Tourism, visitor attraction, a boost to the city's culture and growth, and supporting the local business are the result of riverfront development.
- The growth of digital governance and surveillance has brought transparency, enhanced security, and increased administrative efficiency.

7. Resource Utilization and Execution Strategy

- The project is implemented in the phased system, which promotes its systematic implementation, monitoring, timely completion and efficient use of financial and administrative resources.
- Majority of funds are being used for infrastructure development, including roads, utilities, riverfront development, public spaces etc. to develop the functionality of urban environments.
- Coordinated development of various urban sectors through linkage with schemes such as AMRUT, optimisation of resources, and no duplication of efforts.

- By continuously monitoring projects via digital dashboards, in real time, it becomes possible to track projects, which enhances transparency, accountability, and enables quicker decision-making by authorities.
- Agencies have to coordinate between each other efficiently for smooth implementation, no delays, effective communication and co-ordination with the other agencies handling development project.

9. Human Rights and Social Inclusion

8.1 Economic Impact

- Better connectivity decreases logistics costs, increases transportation efficiency, helps to support trade activities, and provides seamless movement of goods and services throughout the city.
- Tourism and local businesses provide jobs, improve income opportunities and contribute to the economic development by providing greater opportunities to engage visitors and provide cultural activities.
- Owing to the strengthening of the silk industry, access to the market is enhanced, production activity is boosted, opportunities for branding, and support for traditional livelihoods associated with the heritage economy in Bhagalpur.
- The city's real estate sector is experiencing a surge in activity, with demand for housing and commercial properties on the rise, attributed to the city's infrastructure, amenities, and urban development opportunities.

8.2 Social Impact

- Quality of life is enhanced with better access to public services, facilities are available and overall urban living standards among residents are improved.
- Slum improvement for inclusive development offers improved housing, sanitation and basic service delivery, which help mitigate inequalities and enhance living conditions for marginalised groups.
- E-governance enhances citizen participation, which builds transparency, better services, public engagement and accountability in urban administration processes.

9. Challenges and Limitations

- Project implementation delays are caused by administrative delays, contractor inefficiencies, and coordination and procedures complexities at the time of completion of development works.

- A limited financial absorption capacity creates constraints in the efficient use of allocated resources, typically due to the lack of planning, slow implementation and institutional limitations in implementing agencies.
- The issues related to the Ganga floodplain are also environmental as they involve ecological imbalance, enhanced risk of flooding and also damage to natural habitats caused by the activities of urban development.
- Long-term maintenance systems are needed when the built infrastructure is in place and will need regular maintenance, sufficient funding, and robust institutional structures for its sustainability.

10. Future Prospects

- Tourism infrastructure will be expanded, which will draw tourists, improve tourism and increase employment opportunities, cultural tourism and recreational opportunities.
- Improving the capacity of the silk industry and exports will boost production, contribute to better access to global markets, boost incomes and provide livelihood support to traditional livelihoods.
- Better transport and regional connectivity (roads, rail and infrastructure) will boost regional trade, mobility and economic integration with adjacent regions.
- The emergence of eastern India as an economic hub will help boost the region's development tremendously and give a boost to industrial growth in the region which would also help in the generation of employment opportunities and attract investments in the future.

11. Conclusion

The Bhagalpur Smart City, which transforms a historically great Silk City, into a developing Smart City is a model of urban development that balances tradition with modernity. The city has managed to make use of its cultural heritage, including its silk industry and historical importance, as a basis for its modern development. This can help to maintain its identity while also fostering its contribution to urban planning.

Smart Cities Mission in Bhagalpur is a structured and strategic approach in the development of a city. The city has seen significant enhancements in infrastructure, governance, and service delivery through its clear planning processes, significant investments, and the creation of a dedicated body of Bhagalpur Smart City Limited (BSCL). In the realm of urban mobility, digital governance systems, and riverfront development have been key developments that have improved the city's administrative efficiency and tourism potential.Smart road networks, digital governance systems, and riverfront development have also been significant advances, enhancing urban mobility, administrative efficiency, and tourism potential. The wide

range of activities undertaken has helped to enhance the standard of living for residents, as well as providing new economic opportunities.

Although these successes have been made, there are some issues that still need to be addressed in Bhagalpur, such as the issue of delays in implementing projects, the environmental concerns, and the need for sustainable systems for the maintenance of the projects. Nevertheless, the current initiatives to overcome these challenges reflect a long-term approach to sustainable, inclusive and environmentally friendly development. Slowly, some sectors are moving forward, showing a positive trend towards sustainable urbanization.

In conclusion, the case study of Bhagalpur shows the potential of integrated planning, good governance, and community-based development strategies to successfully transform a medium-sized city into a modern urban centre. It is a valuable case study for other cities looking at how to reconcile economic development, social equity and cultural heritage when transforming urban areas.

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