

VIKSIT BHARAT: INFRASTRUCTURE OF BHUBANESWAR

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Abstract:

Bhubaneswar, Odisha's capital city, has emerged as a model for Indian urban development, combining cultural heritage with modern infrastructure. This paper explores the city's infrastructure growth through the lens of Viksit Bharat 2047, focusing on its accomplishments, challenges and future goals. The paper focuses on Bhubaneswar's transition into a sustainable and inclusive urban hub by investigating the impact of initiatives such as the Smart City Mission, advancements in transportation, water supply, sanitation, electricity, and digital governance. The paper also assesses the city's compatibility with Viksit Bharat's aspirations, underlining its importance as a benchmark for India's urban future.

Keywords: Bhubaneswar, Viksit Bharat, Smart City Mission, Urban Development, Sustainable Infrastructure, Urban Mobility, Digital Governance, Inclusive Growth.

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Introduction:

Bhubaneswar is also known as the "Temple City of India" and is recognized for its rich cultural heritage and historical significance. However, in recent times, the city has also been known as a hub for modern urban development. After independence, Bhubaneswar was one of India's first planned cities, designed to meet Odisha's administrative demands. With the launch of the Viksit Bharat 2047 initiative, the city's emphasis has changed to sustainable, inclusive, and technologically advanced infrastructure development. This paper examines the essential components of Bhubaneswar's infrastructure transformation, including its successes under the Smart City Mission and other development programs. It also examines the city's future plans and problems as it strives to become a global urban hub by 2047.

Insight into Viksit Bharat 2047:

Viksit Bharat 2047 is a vision and mission set by the Indian government to transform India into a developed nation by the year 2047, marking the 100th anniversary of India's independence. It was launched by the Prime

Minister Shri Narendra Modi on 11th December, 2023 at 10:30 AM. It emphasizes "Sabka Saath, Sabka Vikas, Sabka Vishwas, Sabka Prayas" as its guiding principle.

The key objectives of Viksit Bharat 2047 are-

- Economic growth
- Infrastructure modernization
- Environmental sustainability
- Social and Inclusive development
- Global leadership
- Technological advancement
- Education and Skill development
- Health and Well-being
- Governance and Reforms

Historical Perspective of Bhubaneshwar's Infrastructure:

1. Ancient Urban Planning:

Since the Kalinga dynasty, Bhubaneswar has been a hub of urban activity, exhibiting impressive planned communities and temple architecture. Tanks and stepwells are examples of ancient water

management system that demonstrate the vision of past planners. Vastu Shastra was followed in the planning of the cities surrounding temples, demonstrating a harmony between practicality and spirituality.

2. Post-Independence Development:

In 1948, German architect Otto Königsberger designed the present-day administrative capital of Bhubaneswar. Government offices, roads, residential colonies for government workers, and basic services like electricity and water were the main emphasis of the early infrastructure. Slow but steady growth laid the groundwork for later urbanization. But as economic liberalization took place in the 1990s, the city started to draw in investments in IT and other businesses.

Current Infrastructure Landscape of Bhubaneshwar:

1. Smart City Mission Achievements

In 2015, Bhubaneswar was the city that was ranked no.1 in India's Smart City Challenge. Major projects include-

- **Integrated Traffic Management System (ITMS):** Provides real-time traffic monitoring and adaptive traffic signals for more comfortable commutes.
- **Public Bicycle Sharing (PBS):** Encouraging environmentally friendly transportation by providing well maintained cycling tracks
- **Smart Janpath Project:** Better roadways with parking spaces and walkways for pedestrians

2. Urban Transport and Connectivity-

- **Public Transportation:** The "Mo Bus" and "Mo Cycle" programs offer environmentally friendly, reliable, reasonably priced, and well-connected transportation services all over Bhubaneshwar. They are connected with important landmarks including train stations, marketplaces, and educational institutions, and their stops are

strategically located.

- **Road Infrastructure:** In order to alleviate traffic, roads, flyovers, highways, and bypasses are being expanded.
- **Air and Rail Connectivity:** Bhubaneswar is connected to important domestic and international locations via Biju Patnaik International Airport. One important centre in Eastern India is the Bhubaneswar Railway Station.

3. Water Supply and Sanitation-

- **24x7 Drink-from-Tap Mission:** Bhubaneswar is one of the few Indian cities that provide clean and safe drinking water from public taps around-the-clock.
- **Waterlogging has decreased and sanitation has improved** thanks to upgraded drainage systems and sewage treatment plants.
- **Initiatives for composting, trash segregation, and door-to-door garbage pickup** are encouraging sustainable waste management.

4. Power and Energy Infrastructure-

- **Installing underground cables and smart meters** to ensure a steady supply of electricity.
- **To lessen carbon footprints, renewable energy is being promoted, particularly rooftop solar projects.**
- **Attempts to increase energy efficiency and lower transmission losses.**

5. Housing and Urban Development-

- **Many low-income families have benefited from affordable housing projects** under the Pradhan Mantri Awas Yojana (PMAY).
- **Smart technology-enabled modern residential societies are emerging.** They offer leisure areas, energy-efficient features, and an integrated security system. It seeks to lessen the influence on the environment and enhance the quality of

life for residents. Tata Ariana, Royal Lagoon, and Z1 are a few examples.

- The conversion of poor slums into sustainable townships with improved facilities. For instance, places like Jharna Basti have been converted from foul-smelling slums to liveable neighbourhoods with the access to basic necessities.

Role of Technology in Infrastructure Development:

- Internet of Things (IoT) and AI: To reduce traffic, the Integrated Traffic Management System (ITMS) makes use of AI and IoT-enabled sensors. They forecast traffic patterns and recommend alternative routes. AI is also utilized in public safety and waste management.
- Geographic Information Systems (GIS): Aids in disaster relief, urban planning, and real-time monitoring. GIS tools offer vital information for decision-making on anything from flood and cyclone control to zoning regulations. GIS maps aid in reducing city waterlogging during the monsoon season.
- Digital Governance: Tax payments and bus timetables are accessible through online platforms such as Bhubaneswar One. By giving people, a chance to express their opinions or voice concerns, it also promotes citizen government by guaranteeing accountability and transparency.
- Data-Driven Decision Making: Big data analytics are applied to infrastructure development and urban policy. In order to analyse trends, forecast future requirements, and make critical decisions, data is gathered from IoT sensors, ITMS, and Bhubaneswar One.

Economic Impact of Infrastructure Growth:

- Economic Growth: Infrastructure development, enhanced connectivity, and modern amenities have made a substantial contribution to the city's

GDP, by drawing in both domestic and foreign investments, particularly in IT and real estate.

- Employment: IT centres and large-scale infrastructure projects have produced jobs.
- IT Ecosystem: Due to establishments like Info Valley and Infocity, Bhubaneswar has become a major hub for IT.
- Tourism Boost: Better connectivity and infrastructure have increased travel. Bhubaneswar Convention Centre and Kalinga Stadium host a number of national and international conferences and sports events, including the 2023 World Hockey Cup and the 2023 AFC Cup. Heritage sites like Lingaraj Temple and the Udayagiri-Khandagiri Caves are frequently visited by both domestic and foreign tourists. Local businesses benefit from tourists visiting temples and neighbouring locations like Puri. Bali Yatra, Asia's largest open trade fair, is held annually in Bhubaneswar.

Challenges in Infrastructure Development:

Despite its progress, Bhubaneswar still faces a number of obstacles, such as-

- Urbanization Pressure: Rapid population expansion puts a pressure on available resources, like housing, transportation, and water, and has an impact on waste management.
- Environmental Problems: Urban heat islands, pollution, and a loss of green cover are all results of rapid development.
- Financial Restrictions: Although obtaining funds from programs such as AMRUT and Smart City Mission has proven effective, large-scale projects frequently encounter delays because of financial constraints, leading to a reliance on loans.
- Social Inclusivity: Ensuring fair growth for all socio-economic categories, especially slum

dwellers and marginalized individuals has been a problem as it is difficult to make them comply.

Future Plans and Vision for 2047:

1. Proposed Projects under Viksit Bharat-

- The extension of regional transportation networks and metro rail to improve connectivity between urban and rural areas.
- To fight climate change, green energy projects, urban forests, and green corridors are being developed.
- Smart energy grids, advanced waste recycling, and renewable energy initiatives to attain sustainability and carbon neutrality.
- Promoting community solar farms in suburban areas and installing solar panels on all government buildings. • Electric vehicles are being aimed to brought in public transportation to lower greenhouse gas emissions.
- Because Bhubaneswar is vulnerable to floods and cyclones, it is crucial to build climate and disaster-resistant infrastructure. Rainwater harvesting systems and flood-resistant roads are among the projects.

2. Long-term Goals-

- Global Urban Hub: Establishing Bhubaneswar as a model city and global leader for sustainable living and smart city development.
- Integration of Heritage and Modernity: Preserving ancient temples while embracing futuristic architecture strikes a balance between modern utilization and historical preservation.
- Sustainability: Using green and renewable energy to reach net-zero emissions. It reduces environmental impact and concentrates on the circular economy.
- Tech-Driven Governance: Bhubaneswar aims to implement a paperless governance model by 2047, incorporating blockchain technology to ensure safe and effective data management.

Comparative Analysis:

1. Comparing Bhubaneswar's progress with Pune and Ahmedabad under the Smart City Mission

There are similarities between Bhubaneswar's Smart City Mission progress and that of cities like Pune and Ahmedabad, both of which have accomplished noteworthy milestones. Pune has placed a strong emphasis on citizen involvement and IT-enabled services, through initiatives like integrated public transportation, including electric buses and a Bus Rapid Transit System (BRTS), and real-time urban dashboards. Even though Bhubaneswar's transportation system is still being developed, it leads in sustainability, particularly thanks to its green urban areas, Integrated Traffic Management System (ITMS), and Public Bicycle Sharing (PBS).

Ahmedabad's Urban Heritage Project demonstrates the city's efforts to strike a balance between modern development and historical protection, which is similar to Bhubaneswar's temple preservation initiatives.

Bhubaneswar has outperformed these cities in terms of innovative solutions like the 24x7 Drink-from-Tap Mission, which guarantees constant access to potable water, neither Pune nor Ahmedabad have adopted this feature on this scale.

However, Ahmedabad and Pune both point out areas like inclusive slum redevelopment and decentralized wastewater management where Bhubaneswar should grow.

2. Inspiration from Singapore and Amsterdam in sustainable urban development

Internationally, Bhubaneswar is influenced by cities like Singapore and Amsterdam. Singapore's Smart Nation effort, which incorporates IoT and AI into urban planning has inspired the digital governance and traffic management systems in Bhubaneswar. Furthermore, Bhubaneswar's aspirations for green

corridors and enlarged public transportation networks are inspired by Singapore's smooth multi-modal transportation system and rooftop gardens. Amsterdam's emphasis on citizen participation and circular economy principles provides valuable lessons to Bhubaneswar's waste management and urban sustainability projects. The Public Bicycle Sharing System in Bhubaneswar is inspired by Amsterdam's extensive cycling infrastructure, although it still requires more dedicated lanes to replicate Amsterdam's cycling culture.

These international benchmarks support Bhubaneswar's development into becoming a world-class smart city and provide insightful information about how to improve inclusivity and sustainability over the long run.

Policy Recommendations:

To maintain its economic trajectory, Bhubaneswar must do the following-

- Develop and strengthen public-private partnerships for capital and expertise.
- Increase public involvement and participation in urban planning by using outreach and technology.
- To reduce climate threats, impose stricter environmental regulations and green building standards.
- Leverage global funding opportunities for environmentally friendly and sustainable projects.
- Encourage data transparency to improve governance.
- Frequent focus groups and feedback sessions can support inclusivity and address the needs of residents.
- Heritage tourism can be increased by collaboration with UNESCO and international travel agencies.
- Bhubaneswar can be positioned as a global cultural destination through specialized cultural festivals and events.

Case Study: Modernization of Biju Patnaik International Airport

Introduction:

Biju Patnaik International Airport (BPIA) located in Bhubaneswar is a prime example of infrastructure development that supports the vision of Viksit Bharat 2047. As the gateway to Odisha and a key hub for eastern India, its modernization is a step towards world-class infrastructure that supports economic growth, regional connection, and global integration.

Overview:

The building of a new domestic terminal (T1) and an international terminal (T2) marked the beginning of BPIA's modernization in response to the rising demand for air travel. The objectives of these improvements were to increase passenger capacity, boost operational efficiency and offer advanced facilities.

Key features of the modernization include-

- **Increased Passenger Capacity:** In response to the sharp rise in business travel and tourism traffic, the airport can now accommodate nearly 4 million people a year.
- **Better Runway:** Direct international flights are now possible because to the extended runway, which can handle larger aircraft.
- **Eco-Friendly Design:** To reduce the environmental impact, the terminals have green spaces, water recycling systems and energy-efficient lighting.
- **Technological Advancements:** Incorporation of self-check-in kiosks, automated luggage handling systems, and advanced air traffic control systems.
- **Improved Passenger Experience:** Travelers can enjoy a top-notch experience thanks to modern lounges, retail stores, and food courts.

Impact:

- **Improvement in Regional Connectivity:**

As a result of modernization, there are now more direct domestic and international flights linking Bhubaneswar major cities like Delhi, Mumbai, Bangalore, and international hubs like Dubai and Bangkok. Odisha's standing as a hub for trade and tourism has been enhanced by increased connectivity.

- **Economic Development:**

The airport has attracted businesses and investments, especially in manufacturing and IT sectors. Local employment has increased dramatically as a result of job creation in the aviation, retail, hospitality sectors.

- **Tourism Growth:**

Bhubaneswar is now more accessible to visitors from across the world who are visiting cultural landmarks like Puri's Jagannath Temple and Konark Sun Temple due to direct international flights. Improvements to the city's infrastructure have made it a popular location for international conferences and events.

- **Support for Smart City Goals:**

Bhubaneswar's ambition for a smart city is in line with the smooth transit connections between the airport and the city, which include better road connectivity and public transportation.

- **Global Standards and Recognition:**

BPIA is one of the most sustainable and effective airports in eastern India thanks to its modernization, which complies with international aviation standards.

Alignment with Viksit Bharat 2047:

- **Global Integration:** India's ambition to lead the world economy by 2047 is supported by BPIA's improved international connections.
- **Sustainability:** The airport's eco-friendly projects demonstrate Viksit Bharat's dedication to

sustainable infrastructure.

- **Economic Growth:** Trade and tourism are encouraged by better connectivity and logistics, which helps India meet its GDP growth goals.
- **Inclusivity:** By ensuring that the airport accommodates all travelers, including those with disabilities, accessibility features support inclusive growth.

Conclusion:

Under the framework of Viksit Bharat 2047, Bhubaneswar's forward-looking approach to infrastructure development is demonstrated by the modernization of Biju Patnaik International Airport. Bhubaneswar has enhanced its standing as a rising global city and helped India achieve its goal of becoming a developed nation by 2047 by building a modern, efficient, and sustainable airport.

Conclusion:

The transformation of Bhubaneswar from a historic city to a contemporary urban hub is evidence of its resilience and progressive policies, and it represents India's larger development goals under Viksit Bharat 2047. The city is in a strong position to make a substantial contribution to India's vision of Viksit Bharat 2047 if it maintains its focus on equitable and sustainable growth. Through the integration of innovative urban planning and heritage conservation, the city has established a standard for inclusive and sustainable growth. Bhubaneswar can set an example for cities around the world and establish itself as a leader in India's urban revolution by striking a balance between technological advancements and cultural preservation, as well as by overcoming obstacles including rapid population increase and environmental issues.

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Cite This Article:

Mr. Antulay A. & Prof. Khan S.H. (2025). Viksrit Bharat: Infrastructure of Bhubaneswar.. In Aarhat Multidisciplinary International Education Research Journal: Vol. XIV (Number I, pp. 33–39). DOI: <https://doi.org/10.5281/zenodo.15250725>