

Smart Cities Mission and Sustainable Urban Planning

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Abstract—The Ministry of Housing and metropolitan Affairs of the Government of India announced the Smart Cities Mission in 2015 with the goal of converting metropolitan areas into technology-driven, sustainable, and livable cities. The mission focuses on enhancing the quality of life through intelligent governance, effective infrastructure, and environmental sustainability because of the problems caused by increased urbanization, which include resource depletion, traffic congestion, pollution, and inadequate infrastructure. The integration of sustainable urban planning principles, such as area-based development, smart mobility, adoption of renewable energy, water and waste management systems, and digital governance, within the framework of smart cities is examined in this study. It emphasizes how innovations like IoT, data analytics, and intelligent transportation systems support improved service delivery and effective resource management. Even while the effort has a lot to offer in terms of social inclusion, environmental preservation, and economic growth, there are still issues including high implementation costs, digital inequality, and maintenance concerns. According to the study's findings, inclusive growth, environmental balance, and long-term urban resilience in India's quickly expanding cities depend on sustainable urban design.

Index Terms— Smart Cities Mission, Sustainable Urban Planning, Smart Governance, Area-Based Development, Pan-City Development and Internet of Things (IoT).

I. INTRODUCTION

According to an area development plan, the Smart Cities Mission aims to establish model areas in a few chosen cities across the nation. These areas are anticipated to have a knock-on effect on other regions of the city as well as neighboring cities and towns. Cities will be chosen in accordance with the Smart Cities challenge, in which they will compete nationally to reap the rewards of this goal. Through a few chosen cities, the mission seeks to support

sustainable urban development and offer financial aid. The Ministry of Urban Development chose which cities would receive funds through a competition-based process. With a cap of 100 cities nationwide, state governments were requested to suggest possible cities. To carry out the initiatives under mission, each city will establish a Special Purpose Vehicle (SPV) led by a CEO. Globally, urbanization is growing quickly. Cities in India account for almost 60% of the country's GDP, but they also confront major problems like poor infrastructure, water scarcity, pollution, traffic jams, and waste management. In order to tackle these issues, the Indian government started the Smart Cities Mission in 2015 with the goal of encouraging equitable and sustainable urban growth.

What is Smart Cities Mission?

The Government of India's main urban revitalization initiative, the Smart Cities Mission (SCM), was introduced on June 25, 2015, with the goal of transforming 100 cities into sustainable, citizen-friendly centers. Through Area-Based Development (ABD) and Pan-city projects, it uses technology, such as Integrated Command and Control Centers (ICCCs), to enhance infrastructure, governance, and quality of life.

Key Objectives of the Smart City Mission:

- **Improve Quality of Life:** Create safe, sustainable, and inclusive, livable urban spaces.
- **Provide Core Infrastructure:** Ensure essential services like adequate water supply, sanitation, waste management, and efficient public transport.
- **Implement Smart Solutions:** Use data-driven technology, such as Integrated Command and Control Centers (ICCs), for traffic management, intelligent lighting, and citizen services.

- Promote Sustainable Development: Focus on environmental sustainability, including green spaces, parks, and reduced pollution.
- Economic Growth & Employment: Enhance economic opportunities and create jobs through improved urban infrastructure.

Core Components of Smart City

1. Area-Based Development (ABD)

- Retrofitting - Enhancing and increasing the efficiency of existing built-up areas (greater than 500 acres).
- Greenfield Development - The development of previously undeveloped land (more than 250 acres) through innovative planning.
- Redevelopment - The replacement of existing, built-up settings to allow for new layouts with improved infrastructure.

2. Pan-City Development

- Smart Traffic Management - Uses sensors and real-time data to reduce traffic congestion and increase road safety.
- Smart Energy Management - Monitors and optimizes electricity usage via smart grids and meters.
- Smart Water Management - Utilizes digital monitoring systems to minimize water waste and increase supply efficiency.

Concept of Sustainable Urban Planning

- Environmental Protection - Integrating parks, green roofs, and urban forests to improve air quality, manage storm water, and combat the urban heat island effect.
- Social Inclusiveness - In order to ensure that growth benefits all citizens, this pillar focuses on building equitable cities with accessible public services, affordable housing, and safe, welcoming public areas.
- Economic Growth - By encouraging a green economy which includes making investments in smart technology, renewable energy, and mixed-use, sustainable development to spur innovation this pillar promotes prosperity.

Examples of Smart City Mission in India

1. Pune

Pune has implemented smart traffic management systems using real-time monitoring and adaptive

signals to reduce congestion. The city has also introduced waste segregation systems, smart street lighting, and improved public transport services. Its Area-Based Development focuses on creating walkable streets and green public spaces.

2. Bengaluru

Bengaluru focuses on smart mobility, digital governance, and sustainable infrastructure under the Smart Cities Mission. The city has implemented integrated command and control centers, smart traffic systems, LED street lighting, waste management improvements, and lake rejuvenation projects to enhance urban sustainability and improve quality of life.

3. Surat

Surat is renowned for its integrated command and control center (ICCC), which provides real-time traffic, public safety, and emergency services monitoring. To improve urban safety and catastrophe management, the city has also created robust surveillance networks, intelligent water management, and flood monitoring systems.

4. Ahmedabad

Ahmedabad has created an effective public transportation system called the Bus Rapid Transit System (BRTS). In order to improve safety and urban administration, it also makes use of digital monitoring and intelligent surveillance technologies.

II. CONCLUSION

A revolutionary step toward upgrading India's urban landscape through technology-driven and citizen-centric development is the Smart Cities Mission. The goal of the mission is to enhance the general standard of living in quickly expanding cities by combining smart infrastructure, governance, sustainable mobility, and effective resource management. In order to guarantee that development is socially inclusive, economically feasible, and environmentally conscious, sustainable urban planning is essential. The objective offers a solid basis for building resilient and future-ready cities, even while issues like financial limitations, fast urbanization, and technological upkeep still exist. In conclusion, in order to achieve long-term urban sustainability and balanced growth, smart cities must be successful not only because of

technology but also because of good planning, strong governance, and engaged citizens.

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