

India's AI-driven Smart City Planning Stuck in Pilot Stages

Fragmented data systems, lower adoption rates and ethical concerns hinder AI implementation in urban planning.



By Smruthi Nadig

Urban India is on the brink of significant transformation, driven by pressing challenges including rapid population growth, infrastructure strain, and environmental concerns. Central to this evolution is AI, a potent tool that has the power to transform urban planning. Nonetheless, despite the immense possibilities, actual implementation is inconsistent, sluggish, and frequently trapped in a cycle of pilot projects that lead nowhere.

So, what are the true obstacles preventing AI from advancing in urban planning? Who is effectively utilising it? And can it genuinely be trusted?

Why AI Isn't (Fully) Planning Your City Yet

Despite the rapid growth of AI, urban planning has yet to implement the technology's capabilities consistently. In conversation with AIM, [Raghunath Koilakonda](#), a senior consultant at the Texas Department of Transportation, outlines the systemic reasons: "Urban departments often operate in silos with fragmented data systems, hindering AI's ability to process comprehensive datasets."

Koilakonda highlights that 80% of Indian cities lack an integrated data infrastructure, making AI predictions unreliable. Furthermore, only 20% of municipal leaders feel confident in using AI, and nearly 70% of citizens are concerned about data privacy in smart cities, impeding on public trust.

[Prajwal Misra](#), director at Rudrabhishek Infosystem (RIPL), a company that builds AI-augmented urban planning solutions, echoes similar sentiments but adds that technological inertia and funding concerns also deter government bodies. "AI is helping us automate a lot of manual work, and unlike what people fear, that it will replace employees, it's not. It's doing the exact opposite. The same [person] can now do twice the amount of work."

Cost is another deterrent. "High initial costs, often \$1–5 million for AI projects, deter investment. Yet phased, agile approaches can deliver incremental value. For example, Singapore's AI-driven [traffic systems](#) faced initial resistance but achieved a 92% reduction in bus crowding issues through stakeholder engagement and pilot projects." Koilakonda adds.

Even the most advanced AI is only as good as the data it receives. City data ecosystems are often outdated, inconsistent, or unavailable in real time.

Koilakonda warns that fragmented data reduces AI model accuracy by up to 30%. Misra adds that many Indian AI tools still rely on manually collected data that is digitised later, a process prone to delays and human error. Real-time data from IoT sensors, CCTV feeds, [traffic analytics](#), and social media insights remains underutilised, despite their availability.

There are also glaring bias blind spots, especially for marginalised communities. Misra explained that when a human planner looks at the data, they apply their lived experience and contextual understanding. As AI lacks this, models may misinterpret or overlook issues in rural areas without providing any context. Newer systems based on LLMs are attempting to bridge this gap by mimicking human context, but they're still in their early stages, he added.

The Invisible AI

The truth is, AI is already silently working behind the scenes in Indian cities. But it's not the flashy, futuristic kind often imagined. Instead, it's embedded into existing tools, such as GIS platforms, digital twins, or satellite imagery analysis systems.

"If you have driven anywhere in India and you've gotten a traffic ticket for overspeeding, that's AI... There are many projects by various governments where they are integrating property tax calculations into this data that's generated through satellite," Misra said.

Digital twin technology replicates real-world infrastructure and is being utilised in metro systems, such as those in London and Singapore, to predict maintenance needs, thereby reducing planning costs by [10-15%](#).

AI-driven demand forecasting and inventory optimisation are often underutilised in supply chain operations. Koilakonda's strategies demonstrate that AI can reduce procurement waste by 15-20% by accurately predicting demand for supplies, such as road materials.

In India, similar adaptations are taking place. RIPL utilises AI-powered satellite imagery and object detection to identify encroachments and enhance urban planning, resulting in efficiency gains of 20-30% in certain projects.

Government Push

India's smart city mission has seen limited AI penetration beyond [traffic management](#), and even those systems face scalability challenges. But there's growing momentum. Misra notes that several development authorities and state-level planning boards are beginning to demand AI-enabled solutions, from digital property mapping to growth simulation models.

However, these initiatives remain sporadic and pilot-based. "It's a funnel," Misra says. "For every 500 AI pilot projects, only two or three are fully implemented." Challenges such as limited bandwidth, a lack of cloud infrastructure, and procurement delays plague progress.

To overcome this, some government collaborations have adopted [hybrid models](#), combining cloud and on-site servers, as well as mobile-first apps designed for low-bandwidth conditions in Tier 2 and Tier 3 cities. Similarly, RIPL deployed mobile-based tools for property tax calculations integrated with AI object detection on satellite images, an approach that reduced errors and improved coverage.

Yet, systemic support for retraining AI models to reflect dynamic urban shifts, especially in rapidly growing cities, is still weak. Some models are retrained every six months, while others are retrained every few years, depending on the type of data. But there's no uniform national guideline for that, says Misra.

AI's potential in urban [infrastructure](#) is not just theoretical. "Transport for London's digital twin solution for the Underground reduced operational costs by up to 44% by predicting maintenance needs," Koilakonda highlights. Singapore's traffic AI has also trimmed commuting wait times by 3-7 minutes and bus crowding by 92%.

India's untapped potential lies in predictive maintenance, resource allocation, and citizen engagement analytics. Koilakonda notes that 65% of Indian cities still rely on reactive infrastructure repairs, despite the fact that AI can pre-empt breakdowns and reduce downtime by up to 30%.

According to the Karnataka government's [mobility plan](#) released in 2020, Bengaluru is one of the cities selected under the Smart City Mission by the Government of India. Planned components include TenderSure roads, an integrated command and control centre, smart bus shelters, and the promotion of non-motorised transport.

The report also recommends measures to strengthen the Bangalore Metropolitan Land Transport Authority (BMLTA) by granting it statutory powers and integrating city bus services with metro and suburban train networks for seamless transit connectivity. Additionally, capacity building for data-driven decision-making is suggested among transit agencies and the BMLTA.

Smarter Tools for Smarter Cities

If India is to realise its smart city ambitions, urban AI systems must be made more reliable, inclusive, and scalable. This begins with breaking data silos through common urban data platforms and increasing collaboration between public agencies, tech companies, and academia.

Misra sees a future where AI functions not independently, but as an integral component of a multi-tech ecosystem, bolstered by robotics, cloud computing, and digital twins.

Meanwhile, Koilakonda calls for a stronger policy framework. He asserts that governments need to invest not just in AI projects, but in AI capacity-building, training city officials, setting data governance protocols, and supporting low-cost pilots that scale incrementally.

AI may not be planning our cities autonomously just yet, but it's laying the digital groundwork for a smarter, more responsive future. The question is no longer whether urban AI will become mainstream, but rather when and how quickly we overcome the barriers in its way.

For Indian cities, the answer may lie not just in technology, but in the will to plan smarter.