

TV RAMACHANDRAN

WHY PUBLIC WI-FI MATTERS TO INDIA'S DIGITAL ECONOMY

PM-WANI was built as an open public Wi-Fi architecture. Treating it as critical infrastructure could finally deliver broadband to the last metre.



India is no stranger to ambitious infrastructure declarations. Highways and expressways, power grids, and optical fibre backbones have all been recognised as strategic national infrastructure. Each time, the formal designation has done more than change a label. It has unlocked funding, triggered regulatory prioritisation, and compelled inter-agency coordination, transforming policy intent into practical reality.

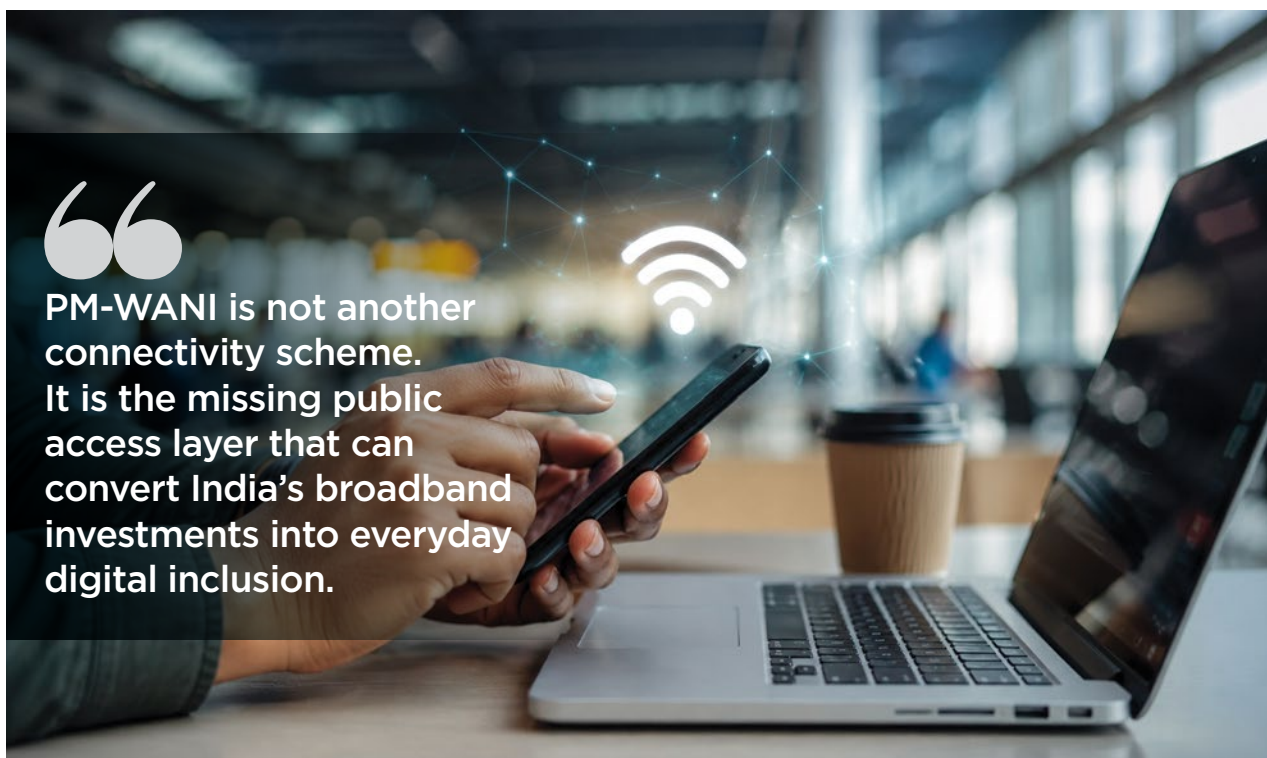
The Prime Minister's Wi-Fi Access Network Interface (PM-WANI), recommended by TRAI and launched by the Department of Telecommunications in December

2020, was conceived as India's answer to connecting the estimated half a billion people still unconnected to the internet. It proposed a licence-free, registration-free, distributed public Wi-Fi architecture capable of turning every grocery store, Common Service Centre and panchayat building into a broadband access point.

The vision was bold, the architecture elegant, and the targets unambiguous: 10 million hotspots by 2022 and 50 million by 2030. As of early 2026, however, India has approximately 0.4 million active PM-WANI hotspots, only around 4% of the intended target.



PM-WANI is not another connectivity scheme. It is the missing public access layer that can convert India's broadband investments into everyday digital inclusion.



India's digital public infrastructure is only as inclusive as the connectivity beneath it, making public Wi-Fi a strategic national asset and not merely a service.

The challenge is not merely one of deployment. It is a governance issue. The conclusion is equally clear: until PM-WANI is treated with the same urgency and institutional seriousness as roads, railways and power, that is, until it is formally designated as critical communication infrastructure, it will continue to function as an aspirational scheme rather than the foundational connectivity layer India urgently needs for socio-economic inclusion.

PM-WANI NEEDS INFRASTRUCTURE STATUS

This Wi-Fi access network interface is, in reality, a government-developed, distributed, layered and interoperable broadband delivery architecture. It unbundles connectivity provision across Public Data Offices (PDOs), akin to the earlier PCOs, Public Data Office Aggregators (PDOAs), App Providers, and a Central Registry maintained by C-DoT. This is precisely the kind of disaggregated, open-access design that telecom needs to ensure no citizen is left behind.

The framework was conceived with this architecture at its core. Under the PDO model, any shop, cafe, or household can become a public Wi-Fi provider without a licence, fee, or bureaucratic approvals. It is perhaps the most democratised infrastructure model India has developed. It transforms citizens from passive consumers of connectivity into active micro-entrepreneurs participating in a national network. This is not merely another government scheme. It is essential infrastructure.

TRAI's actions have already implicitly recognised this. The 71st Tariff Amendment Order of June 2025 mandated that ISPs and TSPs cannot charge PDOs more than twice the retail FTTH tariff for plans up to 200 Mbps. Price controls, access mandates and supply obligations are instruments of infrastructure regulation rather than consumer market management. If TRAI is consistently signalling that PM-WANI constitutes critical infrastructure, policy recognition should now follow.

The argument that inexpensive mobile data has rendered PM-WANI redundant does not withstand



IN BRIEF

- PM-WANI is designed as an open, distributed public Wi-Fi architecture that complements mobile broadband rather than competing with it.
- Public Wi-Fi extends BharatNet's fibre beyond the panchayat, transforming broadband infrastructure into meaningful citizen connectivity.
- Declaring PM-WANI critical infrastructure can unlock funding, stronger governance and faster nationwide deployment of public Wi-Fi.
- The PDO model enables local entrepreneurs to deliver affordable broadband without licences, spectrum costs or complex approvals.
- Affordable mobile data does not replace public Wi-Fi; both serve different connectivity needs and together improve digital inclusion.
- Strong but proportionate security standards can protect public Wi-Fi while supporting India's digital infrastructure and last-mile access.

BharatNet has carried fibre deep into rural India, but PM-WANI can bridge the final gap by bringing broadband from public buildings directly to people nationwide.

scrutiny. Some incumbent sections of the telecom industry have argued that widespread availability of affordable 4G and 5G services removes the need for public Wi-Fi. If mobile data costs only Rs 7-8 per gigabyte, they ask, why would anyone use public Wi-Fi?

This reasoning confuses coverage with inclusion. Mobile connectivity inevitably depends on radio frequency characteristics. Signal quality and consistency are influenced by distance from towers, foliage, and other environmental factors, regardless of the generation of mobile technology. Many of these limitations are significantly reduced in Wi-Fi environments.

Public Wi-Fi and mobile broadband are not substitutes. They are complementary technologies. Mobile services provide personal, subscriber-centric connectivity, whereas public Wi-Fi offers situational, location-based, SIM-free access that serves people when and where they need it, regardless of their telecom subscription or financial circumstances.

Every mature digital economy, from South Korea and Singapore to the United Kingdom, maintains extensive public Wi-Fi infrastructure alongside highly developed mobile networks because they address different connectivity requirements. Critical infrastructure must serve the last citizen, not merely the average subscriber.

BHARATNET NEEDS A LAST-METRE LAYER

India has invested more than Rs 40,000 crore in BharatNet, the world's largest rural broadband programme. By 2025, optical fibre connectivity had reached more than 2.18 lakh gram panchayats, while over 6.93 lakh route kilometres of optical fibre cable had been deployed nationwide. This represents an extraordinary engineering and policy achievement.

Yet without PM-WANI, BharatNet remains, in many places, a road that ends at the panchayat building.

BharatNet provides the backhaul. PM-WANI can deliver the last mile, or perhaps more accurately, the last metre. Fibre infrastructure has little practical

value if villagers cannot access it via an affordable, convenient Wi-Fi connection. PM-WANI is the delivery mechanism that converts national fibre investment into meaningful citizen-level connectivity. Allowing it to underperform effectively accepts that India's largest broadband investment will not fully reach the people it was intended to serve.

Infrastructure designed to deliver national outcomes cannot be treated as an optional add-on. It must be designated, funded and governed as what it truly represents: the capillary layer of India's digital circulatory system.

Once infrastructure is formally designated as critical, its implementation cannot be postponed indefinitely because governments or local authorities have competing priorities. It enters a mandatory delivery framework with accountability, timelines and measurable outcomes. The experience of Smart Cities demonstrates that without such a framework, public Wi-Fi is likely to remain a desirable but non-essential feature, even in environments specifically created to support digital infrastructure.

STRENGTHENING THE PDO ECOSYSTEM

One of PM-WANI's most overlooked strengths is its ability to create entrepreneurship opportunities. The PDO model effectively functions as a micro-franchise system for broadband delivery. It requires no licence, no expensive spectrum acquisition and no regulatory approval. A grocery store owner in Varanasi can become a public internet provider much as a Fair Price Shop owner distributes subsidised food grains, serving as an authorised last-mile operator delivering an essential national service.

The comparison, however, also exposes an important gap. Fair Price Shop operators receive official recognition, regulated margins and legal protections because they are part of an essential distribution network. PDOs enjoy none of these benefits. They operate within a regulatory grey area: recognised by policy, enabled by architecture, yet commercially exposed and institutionally unsupported.

The PDO model enables neighbourhood shops and community institutions to become broadband providers, creating a scalable last-metre network through enterprise.

Designating PM-WANI as critical infrastructure could fundamentally alter this position. PDOs could become eligible for Digital Bharat Nidhi funding for rural deployments, receive Right of Way protections for installing access points on public infrastructure, benefit from subsidised electricity tariffs, and participate in state-sponsored aggregation models in which panchayats, Common Service Centres, health sub-centres, and municipal bodies function as anchor PDOAs.

TRAI's 2026 consultation recommended that state government institutions assume the PDOA role by aggregating PDOs across panchayats, CSCs, municipalities, and healthcare facilities. In effect, this proposes the creation of a state-supported last-mile Wi-Fi distribution network. Such a recommendation can only be implemented effectively if PM-WANI carries the authority and institutional backing of critical infrastructure.

SECURITY REQUIRES STRONGER GOVERNANCE

Security concerns reinforce rather than weaken the case for recognising PM-WANI as critical communication infrastructure. Because public Wi-Fi increasingly supports essential services while relying on evolving IEEE 802.11 security standards, it should be treated as critical information infrastructure rather than a peripheral vulnerability.

Such a designation would require minimum security standards at the access point level while bringing PM-WANI within India's Critical Information Infrastructure Protection framework. The International Telecommunication Union defines critical information infrastructure as systems and services whose disruption or destruction would have a debilitating impact on public health and safety, commerce and national security.

Since PM-WANI seeks to ensure that no citizen remains disconnected, its security governance should be appropriate and proportionate. At the same time, it must avoid discouraging PDO micro-entrepreneurs through unnecessarily burdensome compliance requirements.

The policy question, therefore, is not whether PM-WANI can be made sufficiently secure to justify critical infrastructure status. Rather, it is whether India can afford to leave its expanding public connectivity infrastructure, and the millions of citizens who increasingly depend upon it, outside the governance frameworks designed specifically to protect critical infrastructure.

Security is not a reason for delaying this designation. It is one of the strongest reasons for proceeding with it.

DIGITAL INDIA NEEDS A STRONGER FOUNDATION

India has declared itself a Digital Public Infrastructure nation. Platforms such as Aadhaar, UPI, DigiLocker, ONDC and the Ayushman Bharat Digital Mission are increasingly presented as global examples of scalable, inclusive and sovereign digital infrastructure. Artificial intelligence, too, is now being approached as infrastructure rather than simply another technology platform.

All these initiatives ultimately depend upon connectivity. For more than half a billion Indians who still lack reliable personal mobile broadband, meaningful connectivity depends upon accessible public Wi-Fi built on India's home-grown PM-WANI architecture.

PM-WANI is the underlying connectivity layer supporting India's digital ambitions, and it should be treated accordingly. The era of pilot projects and consultation papers has passed. India should designate PM-WANI-based public Wi-Fi as critical communication infrastructure and establish the funding, governance and regulatory framework necessary to support that decision. 🌐

Digital infrastructure can only be considered complete when every citizen can walk into a public space and connect.

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(Views are personal.)

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