

# Response to TRAI CP 07/2026: Proliferation of Public Wi-Fi Networks in India

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*These comments are submitted in response to Consultation Paper No. 07/2026 issued by TRAI on 27th April 2026. Wiom's responses to the individual consultation questions follow below.*

## Question 1

*What are the key supply-side constraints affecting Public Wi-Fi proliferation in India? What targeted policy or regulatory measures may be required to address these supply-side constraints? Please provide your response in detail with justification.*

### Wiom's Response

The following supply-side constraints are the most significant:

- **Backhaul cost burden:** The average monthly data usage per PDO is within the 300–500GB range of a regular retail FTTH user. There is no basis for PDOs to be charged up to 2x the retail FTTH rate. The cost of bandwidth is further elevated in Tier 3/4 towns and villages due to the absence of local ISP infrastructure and CDN/caching/peering capabilities.
- **Hardware / Device costs:** A PDO today must purchase a separate PM-WANI-compliant router before earning a single rupee — an upfront hardware cost that is the single biggest participation barrier for small entrepreneurs.
- **ISPs outside the fold:** India has approximately 2,000 ISPs, the vast majority of whom have not integrated with PM-WANI, largely due to uncertainty about the regulatory regime.
- **UX and authentication barriers:** App-only OTP authentication creates a high barrier for first-time users, rural populations with basic phones, and those with limited device storage — reducing demand for PDOs and directly impacting their revenue.
- **Absence of a neutral governance body:** There is no formal coordinating authority to set targets, resolve ecosystem-level issues, and drive PM-WANI collectively toward its scale ambitions.

Targeted policy measures Wiom recommends:

- Align PDO bandwidth pricing with retail connections — there is no commercial justification for PDOs to pay more than a regular retail FTTH subscriber given comparable usage profiles.
- Establish block-level peering and CDN caching infrastructure as part of BharatNet's PoP architecture — bringing NIXI Internet Exchange Points and CDN cache nodes to the block level to eliminate the structural cost disadvantage of rural bandwidth.
- Engage Indian CPE and hardware manufacturers as active ecosystem participants through a PLI or design-linked incentive for PM-WANI-compliant CPE — without an affordable hardware supply chain, the device mandate remains aspirational.
- Direct ISPs to pre-load a PM-WANI-compatible secondary SSID on all CPE deployed to broadband subscribers, eliminating the upfront hardware cost for PDOs entirely through a firmware update alone.
- Introduce browser-based authentication as a mandatory complement to app-based login.
- Constitute a neutral Nodal Agency — modelled on NPCI's role in UPI — to bring every stakeholder together in mission mode toward a shared national connectivity goal, set national hotspot targets, assign accountability, and publish periodic transparency reports- while existing PDOAs continue to compete on Apps, user experience and pricing.

## Question 2

*What are the major demand-side constraints limiting the uptake of Public Wi-Fi services in the country? What targeted policy or regulatory measures may be required to address these demand-side constraints? Please provide your response in detail with justification.*

### Wiom's Response

- **Authentication friction:** PM-WANI under the current app-only model requires multiple steps — discovering the hotspot, downloading the app, OTP authentication, and voucher purchase — deterring users who already have mobile data. Many users, particularly in rural areas, have basic phones, limited device storage, or varying levels of digital literacy, making app-based login a fundamental barrier for the very population PM-WANI is designed to serve.
- **Low awareness and perception gap:** Many potential users do not know PM-WANI hotspots exist near them, and many potential PDOs do not know that registering requires no licence, no fee, and minimal setup. PM-WANI is often perceived as a government scheme rather than a scalable digital architecture — limiting both consumer adoption and entrepreneurial participation.

Targeted policy measures:

- Introduce one-click, browser-based login as a mandatory complement to app-based onboarding — designed to work across all device types and literacy levels.
- Launch nationwide campaigns reinforcing affordability (as low as ₹5/day), clarifying that becoming a PDO requires no licence, and highlighting relatable use cases such as online education, OTT, UPI, and telemedicine.
- Showcase entrepreneur-led PDO models and successful cluster rollouts to position PM-WANI as a dynamic, innovation-driven opportunity rather than a linear government scheme.
- Mandate PM-WANI hotspot signage with government branding at all PDO locations to build visibility and user trust.

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## Question 3

*Despite the PM WANI initiative, scaling the number of public hotspots across diverse geographies, especially in remote and underserved regions, remains uneven. What are the key challenges in expanding both the density and geographic spread of hotspots, and what strategies could help accelerate more balanced, nationwide coverage? Please provide your response in detail with justification.*

### Wiom's Response

The geographic unevenness of PM-WANI deployment reflects structural incentive misalignment. India has already invested heavily in BharatNet to bring fibre to the village level — layering PM-WANI on top of BharatNet is the most direct path to ensuring that rural populations, who most need affordable internet, become the biggest beneficiaries. Three constraints currently prevent this from happening:

- **BharatNet's last-mile gap:** Fibre reaches GPs but not the actual hotspot location or village community. This last-mile problem is real and acute in rural GPs.
- **Hardware gap:** BharatNet's fibre reaches 2.18 lakh Gram Panchayats, yet the last metre remains dark because customer-edge routers are not mandated to be PM-WANI-capable. Without a device mandate, the backbone exists but cannot be activated.

- **DBN funding not reaching first-mover PDOs:** Commercially unviable geographies need active de-risking. Without time-bound financial support for first-mover PDOs, the ecosystem will not take root in the areas that need it most.

Specific strategies recommended:

- Mandate PM-WANI-compatible firmware on all new CPE procured under BharatNet so that every GP-level installation is instantly PM-WANI capable.
- Make BharatNet dark fibre available to licensed ISPs at standardised, published rates — removing the opacity that currently prevents ISPs from building viable backhaul propositions in rural areas.
- Deploy DBN/USOF funding to subsidise first-mover PDO deployments in GPs with no existing connectivity, covering the first 6–12 months of operations until demand is established.

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## Question 4

*What changes, if any, are required in the existing PM-WANI framework to improve revenue certainty and long-term sustainability for PDOs/PDOAs? Please provide your response in detail with justification.*

### Wiom's Response

The PM-WANI framework's core design is not the problem. Where the ecosystem has underperformed, the cause is not architectural — it is the absence of the right commercial conditions, policy support, and infrastructure enablement surrounding it. What needs to change is not the framework but the ecosystem economics within which it operates. The following changes are recommended:

- **Backhaul cost reduction:** The average monthly data usage per PDO is well within the 300–500GB range of a regular retail FTTH user. Align PDO bandwidth pricing with retail connections — there is no commercial justification for PDOs to pay more than a regular retail FTTH subscriber given comparable usage profiles.
- **DBN/USOF de-risking:** PDOs in commercially unviable geographies should receive time-bound DBN support, analogous to viability gap funding in infrastructure projects.
- **Device mandate:** Directing ISPs to pre-load a PM-WANI-compatible secondary SSID on all CPE deployed to broadband subscribers would dramatically expand the PDO base at zero incremental hardware cost. A subscriber's existing router becomes a PM-WANI hotspot through a firmware update alone — no new device, no additional investment — with the potential to convert India's 45+ million wired broadband connections into active PM-WANI nodes, making hardware cost a non-issue for any entrepreneur choosing to become a PDO.
- **Engage Indian CPE and hardware manufacturers as active ecosystem participants:** A Production-Linked Incentive (PLI) or design-linked incentive specifically for PM-WANI-compliant CPE — analogous to how UPI catalysed an indigenous device and POS ecosystem — would accelerate hardware availability, reduce device costs, and create a domestic manufacturing opportunity. CPE and hardware OEMs should also be given a formal seat in the governance of the proposed neutral Nodal Agency and its device certification body, so that product roadmaps are aligned with PM-WANI standards from design through to deployment.

## Question 5

*Are there any other challenges currently faced by PDOAs/PDOs? If yes, what changes can enhance the participation of entrepreneurs under the PM-WANI framework? Please provide your response in detail with justification.*

### Wiom's Response

- **Draft Authorisation Rules — unenforceable compliance burden:** Clause 64(2)(b) requires PDOAs to ensure each PDO uses internet connectivity from a licensed ISP — operationally impossible for a national PDOA managing thousands of hyper-local, independently operating PDOs. A foundational principle of good governance is that no entity should be made accountable for matters beyond its control. PDOAs are digital enablers that provide authentication infrastructure, billing platforms, and application interfaces — they do not own, operate, or supervise the physical network infrastructure or the primary internet connection of the PDO. The PDO's choice of ISP is an independent commercial decision that the PDOA has no means to verify or enforce. This clause violates the 'no control, no liability' principle and should be removed, with compliance responsibility placed on the PDO directly through a contractual framework.
- **App-only OTP restriction:** TRAI should explicitly permit browser-based OTP authentication (Clause 64(4)(c)) as an alternative to app-based login. Restricting to app-based OTP excludes users with basic phones, limited storage, or low digital literacy — the very population PM-WANI is designed to serve.
- **Absence of neutral governance body:** There is no formal mechanism for PDOAs to raise ecosystem-level issues. A neutral Nodal Agency modelled on NPCI's role in UPI is needed for governance, accountability, and coordination.
- **Low visibility of PM-WANI at PDO and ISP level:** PM-WANI is often perceived as a government scheme rather than a scalable digital infrastructure opportunity — limiting both consumer adoption and entrepreneurial participation. At the PDO level, most potential entrepreneurs are unaware that becoming a PDO requires no licence and no technical expertise beyond operating a router. ISPs, who are best placed to seed and grow the PDO ecosystem, are not currently active participants due to low visibility of PM-WANI within their own operations and subscriber communications. Closing this visibility gap requires a sustained, multi-channel effort.

Measures to enhance entrepreneurial participation:

- Remove Clause 64(2)(b)(i)-(ii) from the Draft Authorisation Rules.
- Amend Clause 64(4)(c) to permit browser-based authentication alongside app-based OTP in the Draft Authorisation Rules.
- Create a neutral Nodal Agency for PM-WANI ecosystem governance.
- Launch nationwide campaigns positioning PM-WANI as simple, secure, and government-backed — clarifying that becoming a PDO requires no licence and highlighting relatable use cases such as online education, OTT, UPI, and telemedicine.
- Standardised ISP onboarding, transparent technical documentation, and policy incentives are needed to bring the full ISP base into the PM-WANI fold.

## Question 6

*Are there improvements needed in the Authentication, Authorization, Roaming, and Payment architecture of the PM-WANI Framework? Please share suggestions, if any. Please provide your response in detail with justification.*

### Wiom's Response

#### A. Authentication: Browser-Based Login

The current app-based authentication model has fundamental limitations: it requires an app download (a barrier for users with limited storage), app availability varies across Android and iOS, and access levels differ across device operating systems. Browser-based, one-click login must be introduced as a mandatory option alongside app-based onboarding — removing the single biggest friction point for first-time users, those with basic phones, and those with limited device storage, without requiring any app download.

#### B. Roaming: Standardised Inter-PDOA Connectivity

While seamless roaming is a worthy long-term aspiration, roaming delivers meaningful value only when users move between different PDOA coverage areas with regularity — a scenario that is unlikely at current hotspot density. PM-WANI's comparative advantage is in deepening the quality and reliability of stationary, high-consumption access at individual hotspot locations. The PM-WANI framework already permits bilateral PDOA-to-PDOA commercial arrangements — the peer-to-peer mechanism is the appropriate starting point.

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## Question 7

*In the Indian context, which of the following models would be more appropriate for the proliferation of Public Wi-Fi? a. A model where the Government actively ensures hotspot deployment through direct funding and implementation support, including backhaul provision; or b. A model where the Government primarily ensures availability of robust backhaul infrastructure and intervenes in hotspot deployment only in cases of market failure. Please provide your response in detail with justification.*

### Wiom's Response

Model (b) — with an important qualification for underserved geographies.

The Government's role in the PM-WANI ecosystem is most effective when it focuses on creating the conditions for a competitive private ecosystem to thrive — ensuring backhaul availability, providing spectrum, and setting governance standards — rather than directly operating or funding hotspot deployment. Where adequate backhaul exists and commercial demand is present, the private ecosystem of PDOAs, PDOs, and ISPs will deploy and sustain hotspots without government intervention.

However, ensuring robust backhaul in the Indian context means more than policy intent. It requires BharatNet fibre to be genuinely accessible — available to any licensed ISP on transparent and published wholesale terms, and backed by reliable service levels. Without this, the backhaul that Model (b) assumes simply does not exist in large parts of rural India.

In underserved geographies where this gap persists, the Government must go further: actively ensuring last-mile backhaul through BharatNet integration and deploying DBN funding to de-risk first-mover PDO deployments for the first 6–12 months until local demand is established. This targeted intervention in areas of genuine market failure is not a contradiction of Model (b) — it is what makes Model (b) work in India's diverse geography.

For urban areas and high-footfall public locations, the Government's role is facilitative — mandating PM-WANI deployment in government-owned institutions and enabling the ISP device mandate. The market does the rest.

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### Question 8

*Is there a need to adopt separate strategies for Public Wi-Fi proliferation in rural and urban areas? If yes, suggestions may be provided. Please provide your response in detail with justification.*

#### Wiom's Response

Yes, unequivocally. Urban and rural PM-WANI markets are structurally different in every relevant dimension and require distinct strategies.

- **Urban/Peri-Urban:** Multiple ISPs and competitive backhaul; smartphone users with mobile data; high TV penetration. Targeted interventions: retail parity on backhaul pricing; secondary SSID pre-loaded on all ISP CPE with one-tap PDO opt-in; and browser-based authentication as mandatory complement to app-based login.
  - **Rural GPs:** BharatNet is the only viable backhaul — layering PM-WANI on top of BharatNet is the most direct path to affordable rural internet; first-time users with basic phones; subsistence internet / welfare / education revenue model; last-mile connectivity, device access, and awareness as key barriers. Targeted interventions: PM-WANI-compatible firmware mandated on all BharatNet CPE; dark fibre available to licensed ISPs at standardised published rates; DBN/USOF funding to subsidise first-mover PDOs for the first 6–12 months until demand is established.
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### Question 9

*What measures can be taken to improve the deployment and uptake of Public Wi-Fi networks in high-footfall areas for both outdoor (such as bus stops, roadside transit points, open public parks, markets, tourist sites), and indoor (such as airports, railway stations, malls, public institutions)? Please provide your response in detail with justification, separately for outdoor and indoor scenarios.*

#### Wiom's Response

Demand in transit hubs and high-footfall locations is high, but adoption remains limited by patchy availability and friction in access.

#### Outdoor High-Footfall

- Mandate PM-WANI deployment as a condition for use of public street furniture, with municipal bodies providing access at zero or nominal cost.
- Bundle power supply with street infrastructure permissions — outdoor deployments fail not from connectivity but from reliable power access.
- Deploy QR-code-based seamless login at outdoor locations — one scan, browser-based authentication, no app required.
- Leverage Smart City fibre and CCTV infrastructure already installed across 100 Smart Cities — Wi-Fi APs can be activated at marginal cost on the same poles.
- Partner with public utilities and institutions to expand hotspot coverage and offer short-duration, high-speed packages such as 1-hour or day passes suited to transient users.

#### Indoor High-Footfall

- Mandate Public Wi-Fi in all government-owned or government-funded high-footfall buildings as a condition of infrastructure funding or operational licence.
- Enable neutral-host in-building Wi-Fi infrastructure in large private venues — a single shared Wi-Fi backbone serving multiple providers.
- Integrate PM-WANI login with existing venue apps and portals (IRCTC, DigiYatra, UMANG) to leverage existing user trust and reduce authentication friction.
- Draw lessons from global best practices — seamless onboarding via OTP or QR login, combined with short-duration high-speed packages, drives sustained uptake in high-footfall environments.

## Question 10

*If the Government decides to provide financial support for the proliferation of Public Wi-Fi, which funding mechanisms would be most suitable for India? Should a uniform funding mechanism be adopted nationwide, or should differentiated funding mechanisms be used for rural, urban, and high-footfall areas? Please provide your response in detail with justification.*

### Wiom's Response

Wiom recommends a differentiated funding mechanism with three tracks:

- **Rural and unserved GPs:** DBN/USOF direct grants or viability gap funding for backhaul (BharatNet last-mile extension).
- **Urban areas:** No direct hotspot subsidies needed. The dual SSID intervention is sufficient. Government role: mandate PM-WANI in public buildings and institutions.
- **Establish block-level peering and CDN caching infrastructure as part of BharatNet's PoP architecture:** Rural bandwidth is structurally expensive not because BharatNet fibre is unavailable but because every byte of content consumed in a Gram Panchayat must traverse 1,500–2,000 km of long-haul BharatNet fibre as paid transit, even when the same content is requested thousands of times in the same district. India's ~80 NIXI Internet Exchange Points and all major CDN cache nodes currently sit in metros and state capitals, creating the structural cost differential between urban and rural bandwidth. It is recommended that every block-level BharatNet PoP be architected to host: (i) a sub-regional Internet Exchange Point where local ISPs and PDOAs peer directly under NIXI governance; and (ii) rack space, power, and high-speed ports for CDN cache nodes from global and Indian content platforms. Internationally, regional IXPs reduce ISP transit costs by 20% or more, and edge caching serves 60–80% of typical consumer traffic without touching upstream transit. Replicating this at the block level is the single largest structural lever available to bring effective rural bandwidth cost to parity with urban.

## Question 11

*What criteria should govern the allocation and disbursement of funds across rural, urban, and high-footfall areas, respectively? Please provide your response in detail with justification.*

### Wiom's Response

- **Rural:** Priority to GPs with zero PM-WANI hotspots; BharatNet fibre already present but unutilised; existing active PDOAs willing to onboard PDOs in the GP.
- **Cross-cutting criteria:** Transparency — all funded deployments must report to a central dashboard with real-time uptime, usage, and user metrics. Performance-linked release of subsequent tranches.

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## Question 12

*Is the lack of adequate and reliable last-mile connectivity a critical constraint for the proliferation of Public Wi-Fi in the country? If yes, what specific measures may be considered by the Central Government, State Governments, and local bodies to address the last-mile constraints? Please provide your response in detail with justification.*

### Wiom's Response

Yes — and it is a significant constraint for PM-WANI proliferation in rural India. India has already invested heavily in BharatNet to bring fibre to the village level; layering PM-WANI on top of BharatNet is the most direct path to ensuring rural populations who most need affordable internet become the biggest beneficiaries. Three structural constraints currently prevent this: the last-mile gap between GP buildings and the village community; customer-edge routers not being mandated to be PM-WANI-capable; and limited backhaul competition in rural areas keeping pricing high and quality inconsistent.

#### Central Government:

- Formally recognise BharatNet as the primary infrastructure backbone for PM-WANI in rural geographies, and mandate its integration with PM-WANI as a national policy objective.
- Publish a national tariff schedule for BharatNet dark fibre at GP-level PoPs, available to any licensed ISP on a non-discriminatory basis.
- Establish block-level peering and CDN cache infrastructure as part of BharatNet's PoP architecture. Today, India's ~80 NIXI Internet Exchange Points and all major CDN cache nodes sit in metros and state capitals. Every YouTube video, DIKSHA lesson, software update, or WhatsApp media file consumed in a Gram Panchayat traverses 1,500–2,000 km of long-haul BharatNet fibre as paid transit — even when the same content is requested thousands of times in the same district. It is recommended that every block-level BharatNet PoP be architected to host (i) a sub-regional Internet Exchange Point where local ISPs and PDOAs peer directly under NIXI governance, and (ii) rack space, power, and high-speed ports for CDN cache nodes from global and Indian content platforms. Regional IXPs reduce ISP transit costs by 20% or more (Internet Society data), and edge caching serves 60–80% of typical consumer traffic without touching upstream transit.
- Define clear Service Level Agreements (SLAs) for Project Implementation Agencies (PIAs) responsible for BharatNet infrastructure, mandating minimum uptime thresholds, maximum restoration timelines, and financial penalties for downtime — ensuring that the fibre backbone PM-WANI depends on is reliably operational on the ground.
- Mandate PM-WANI-compatible firmware on all CPE procured and deployed under BharatNet: every GP-level BharatNet installation already has a customer-edge router — a firmware update specific to BharatNet-procured CPE would instantly make every such installation PM-WANI capable without any additional hardware investment, directly addressing the last-metre gap where fibre exists but the router cannot broadcast a PM-WANI SSID.
- Deploy DBN/USOF funding to subsidise first-mover PDO deployments in GPs with no existing connectivity, covering the first 6–12 months until demand is established.

#### State Governments:

- Designate District-level nodal officers responsible for coordinating BharatNet last-mile extension and PM-WANI deployment within their jurisdiction.
- Actively facilitate ISP entry into underserved blocks by removing State-level regulatory friction and enabling access to State-owned fibre assets on neutral terms where available.

#### Local Bodies:

- Provide access to Panchayat buildings, schools, community halls, and street furniture for PDO equipment installation at zero or nominal cost, treating Wi-Fi infrastructure on par with other public utilities.
  - Designate a PM-WANI nodal point at the GP level to assist with awareness creation, on-ground permissions, and first-level coordination.
  - Facilitate reliable power access for outdoor PDO installations, including solar connections where grid power is unreliable.
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### Question 13

*Is there a need for the Government to provide funding for provisioning of last-mile connectivity in the uncovered or underserved areas for Public Wi-Fi networks? If yes, which funding option is best suited in the Indian context, and what should be the criteria for rural, urban, and high footfall areas, respectively? Please provide your response in detail with justification.*

#### Wiom's Response

Yes, government funding is necessary for last-mile connectivity in commercially unviable geographies.

- **DBN as primary funding instrument:** DBN (Digital Bharat Nidhi, successor to USOF) should fund last-mile fibre extension from GP PoPs to PDO locations in commercially unviable GPs as capital grants, not revenue subsidies.
  - **PPP model for BharatNet last mile:** Private ISPs/PDOAs should be permitted to extend BharatNet fibre to households and commercial locations with DBN providing viability gap funding where revenue projections fall short.
  - **Criteria:** Uncovered GPs (zero active PM-WANI hotspots); BharatNet fibre present at GP level; a registered PDOA willing to onboard PDOs. Disbursement phased against deployment and usage milestones.
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### Question 17

*What facilitative roles can local bodies play in accelerating the deployment and sustainable operation of Public Wi-Fi networks in rural and urban areas? Please provide your response in detail with justification.*

#### Wiom's Response

Local bodies — both Urban Local Bodies and Panchayati Raj Institutions — are the most important on-ground enablers of PM-WANI deployment. Their facilitative role operates across three dimensions:

- **Infrastructure access:** Municipalities and Panchayats should provide access to public assets — street furniture, poles, bus shelters, buildings — for PDO equipment installation at zero or nominal cost. Wi-Fi infrastructure should be treated as a public utility, no different from water or electricity. Where Wi-Fi obligations can be bundled into existing municipal concessions — advertising, parking, waste management — this creates a self-sustaining funding model without additional government expenditure.
- **Demand creation and service delivery:** Local bodies are uniquely positioned to create anchor demand that makes a PDO's revenue predictable. By channelling government service delivery — DBT access, citizen grievance redressal, health camp connectivity, Panchayat meetings — through PM-WANI hotspots, local bodies give residents a concrete, recurring reason to connect. At the GP level, the Panchayat itself can register as a PDO, with revenue

flowing into GP own funds — giving local governance a direct financial stake in the success of the network.

- **Operational support:** Local bodies should facilitate reliable power connections for PDO installations — including metering support and solar options where grid power is unreliable. Appointing a PM-WANI nodal officer at the ULB or GP level, with clear accountability for hotspot uptime, ensures that DBN-funded deployments remain operational rather than becoming stranded assets.

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## Question 18

*What regulatory or policy incentives, schemes or programs are required to promote active participation of TSPs and ISPs in Public Wi-Fi deployment? Please provide your response in detail with justification.*

### Wiom's Response

- **Device mandate and ISP activation (highest impact):** TRAI should direct all licensed ISPs to pre-load PM-WANI-compatible secondary SSID firmware on all CPE deployed to broadband subscribers — a firmware update that converts India's 45+ million wired broadband connections into PM-WANI hotspots at zero cost. Alongside this technical mandate, ISPs should be required to actively promote PM-WANI to their existing subscribers, including the opportunity to become a PDO and earn income from their existing connection, and to bundle PM-WANI hotspot access into their consumer plans — positioning broadband as a service that works both at home and across a growing network of public hotspots.
- **Anyone can become a PDO with a single tap — the one-click registration vision:** The device mandate and PDO registration should not be two separate processes. Any broadband subscriber whose router already has the PM-WANI secondary SSID pre-loaded should be able to opt in to become a PDO through a single tap in their ISP's subscriber app — with auto-enrolment into PM-WANI, automatic PDOA assignment, and instant activation of the public-facing SSID. The subscriber's existing Aadhaar-linked broadband KYC is sufficient.
- **PLI / design-linked incentive for PM-WANI-compliant CPE manufacturers:** The demand-side CPE mandate must be matched by a supply-side intervention. TRAI should recommend that MeitY and DPIIT introduce a PLI scheme or design-linked incentive specifically for PM-WANI-compliant routers and access points manufactured in India.

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## Question 19

*What regulatory or fiscal incentives, schemes or programs may be required in the provisioning of bandwidth and backhaul for Public Wi-Fi networks? Please provide your response in detail with justification.*

### Wiom's Response

- **Pricing parity:** The average monthly data usage per PDO is within the 300–500GB range of a regular retail FTTH user. There is no basis for PDOs to be charged up to 2x the retail FTTH rate. The ceiling should be revised to retail parity (1x), supported by wholesale price transparency norms to ensure competitive pricing between ISPs and PDOs.
- **BharatNet open access:** BharatNet dark fibre at GP-level PoPs must be available to any licensed ISP at a published, non-discriminatory tariff. No negotiation, no delays. This opens up backhaul competition in rural areas.
- **DBN capital grants:** PDOs in commercially unviable geographies should receive time-bound DBN support, analogous to viability gap funding in infrastructure projects.

- **BharatNet as cost-eliminator for rural PDOs:** Merging the PM-WANI distribution layer with the BharatNet connectivity layer — so that PDOs in BharatNet-covered areas access bandwidth through this public infrastructure rather than through commercial ISP subscriptions — would reduce or eliminate the monthly broadband cost that currently makes rural PM-WANI deployment financially marginal. Together with the ISP-bundled CPE mandate (which removes the device cost), these two interventions address the two largest cost components in the PDO model.
  - **Cache-placement obligation on large content platforms:** Following international precedent, content platforms serving Indian users above a defined threshold should be required to co-locate cache infrastructure at block-level BharatNet PoPs in identified priority districts.
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## Question 20

*What measures can be adopted to incentivise private enterprises, commercial establishments, shop owners, community institutions etc. to install public Wi-Fi hotspots? Please provide your response in detail with justification.*

### Wiom's Response

- **Narrative shift and brand building:** PM-WANI is often perceived as a government scheme rather than a scalable, entrepreneur-driven digital architecture — and this perception is the single biggest barrier to voluntary participation. A sustained nationwide campaign must reposition PM-WANI as a livelihood opportunity: simple to join, secure to operate, and government-backed. The campaign must clarify that becoming a PDO requires no licence and no technical expertise beyond operating a router, bringing the proposition to life through relatable use cases — online education, OTT, UPI, and telemedicine that resonate with the communities PDOs serve. The story needs to be told through Panchayat networks, CSC channels, banking correspondents, and SHG meetings, positioning PM-WANI not as a scheme to be rolled out but as an opportunity to be seized.
  - **Reducing the cost to become and remain a PDO:** Two structural barriers deter participation — the upfront cost of hardware and the ongoing cost of connectivity. On the upfront cost, directing ISPs to pre-load a PM-WANI-compatible secondary SSID on all CPE eliminates the need for a separate router entirely — every existing ISP connection becomes a potential PM-WANI hotspot through a firmware update alone. On the monthly cost, routing PM-WANI bandwidth through BharatNet's fibre infrastructure would reduce or eliminate the commercial broadband subscription that currently makes rural deployment financially marginal. Together, these two interventions address the two largest cost components in the PDO model and are the only combination that can make the marginal cost of adding a new PDO approach zero — which is the scale the programme envisions.
  - **Financial Support via Digital Bharat Nidhi (DBN):** Leverage DBN to sustain deployments in underserved geographies and support first-mover PDOs in rural areas.
  - **CSR incentives:** Hospitals, schools, libraries, and community centres providing PM-WANI Wi-Fi should be eligible for CSR credits under the Companies Act, incentivising corporates to fund hotspot deployments in their CSR geographies.
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## Question 22

*Are users facing challenges in the authorization and authentication procedures for accessing Public Wi-Fi Networks? If yes, how can authorization and authentication processes be simplified while ensuring security and compliance? Please provide your response in detail with justification.*

### Wiom's Response

Yes. Authentication friction is one of the two most critical barriers to PM-WANI adoption. The current multi-step authentication journey is prohibitive for the target user base.

- **Make browser-based, one-click login a mandatory option alongside app-based onboarding:** Removing the single biggest friction point for first-time users, those with basic phones, and those with limited device storage, without requiring any app download.
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## Question 23

*Is there a need for a centralized platform for authentication and payment systems in the Public Wi-Fi ecosystem? If yes, which entity is best suited for its implementation and management? Please provide your response in detail with justification.*

### Wiom's Response

No. A centralised platform consolidating PDOA functions, App Provider functions, and the Central Registry under a single entity is not recommended. PM-WANI's architecture is deliberately decentralised — and for good reason.

### Why centralisation is the wrong answer:

- **Single point of failure:** If the central platform experiences downtime or a security breach, every PDO and user across India loses access simultaneously. PM-WANI supports education, telemedicine, UPI, and welfare access — critical infrastructure must be built to stay up, not merely recover.
- **Inclusion harm:** PM-WANI was designed for the small shopkeeper, the household with unused broadband capacity, the community institution — first-time participants in the digital economy for whom the barrier to entry must be as low as possible. A centralised entity sitting between the PDO and the user, capturing a share of already thin revenues, adds cost and complexity at precisely the point where the model must be simplest and most accessible.
- **Loss of openness:** PM-WANI's strength lies in its openness — no licence, no fee, no single gatekeeper. This openness is not incidental; it is the mechanism by which the ecosystem reaches the scale and diversity it needs. A centralised entity with mandatory revenue-sharing would replace this open architecture with a controlled one — transforming PM-WANI from a platform for widespread entrepreneurial participation into a regulated utility with a commercial gatekeeper at its centre.

### What the ecosystem does need — a neutral Nodal Agency:

Today, PM-WANI lacks a neutral governing body to bring all stakeholders — PDOs, PDOAs, App Providers, device manufacturers, and Government and private entities — together in mission mode toward a shared national connectivity goal. The proposed Nodal Agency, modelled on NPCI's role in UPI, would address this gap:

- Sit above the ecosystem as neutral infrastructure, without competing in it.
- Set long-term national hotspot deployment targets and assign clear accountability.
- Monitor ecosystem health and surface on-ground challenges through structured stakeholder engagement.
- Publish periodic transparency reports to build trust across all participants.

Existing PDOAs would continue to compete on apps, user experience, and pricing.

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## Question 24

*What steps are required to achieve interoperability and seamless roaming? Should inter-hotspot roaming be mandatory? Should a 'super-aggregator' be introduced?*

### Wiom's Response

There is currently no operational framework for roaming or interoperability across PDOA networks. While the PM-WANI framework already permits two PDOAs to enter into bilateral commercial arrangements to enable roaming between their respective networks, this peer-to-peer mechanism is limited in reach and does not yet constitute a universal interoperability framework.

#### **A. The Scale Barrier — Is Universal Interoperability Justified Today?**

The PM-WANI ecosystem is still at an early stage of national deployment. Roaming delivers value only when users move between different PDOA coverage areas with regularity — a scenario that is unlikely at current hotspot density. Interoperability is therefore a medium-term objective; premature investment would impose costs on PDOAs that present usage volumes cannot justify.

#### **B. Is Seamless Roaming the Right Use Case for PM-WANI?**

On-the-go connectivity is increasingly addressed by mobile networks. The more meaningful use case for PM-WANI is the stationary, high-data consumption user — someone in a fixed location who wishes to consume large amounts of data without depleting their mobile data allowance. This suggests that the priority for PM-WANI should be deepening the quality and reliability of coverage at individual hotspot locations rather than investing in cross-network handover infrastructure at this stage.

#### **C. On the Proposal for a 'Super-Aggregator'**

The introduction of a super-aggregator is not supported. Concentrating authentication, session management, and commercial settlement within a single entity would create a single point of failure in what is deliberately designed as a distributed, democratic architecture. PM-WANI's strength lies in its decentralised model — a super-aggregator would fundamentally undermine this design principle.

While the PM-WANI framework already enables bilateral roaming arrangements between PDOAs, universal interoperability remains a medium-term objective dependent on ecosystem scale. The peer-to-peer bilateral mechanism is the appropriate starting point. The introduction of a super-aggregator is not supported.

## Question 25

*What monetisation models are most appropriate for rural, urban, and high-footfall locations, respectively? Please also suggest any additional monetisation models that may be suitable in the Indian context. Please provide your response in detail with justification.*

### Wiom's Response

#### **Rural Locations**

- **Sachet pricing:** Pay-per-day or pay-per-GB plans priced below the effective cost of mobile data for non-subscribers.
- **DBN/USOF subsidy in first 12 months:** DBN may provide time-limited operational support for rural PDOs while demand builds.
- Advertisement of relevant content from both government and private players.

#### **Urban Locations**

- **Freemium model:** 30 minutes/day free to establish the habit; paid plans for unlimited or high-speed access.
- **Advertisement-supported free access:** Ad-supported captive portal model provides a free tier while driving advertising revenue without subscription friction.

### High-Footfall Locations

- **Neutral-host model with revenue sharing:** A single shared Wi-Fi infrastructure serves multiple providers; venue owner shares revenue from advertising, sponsored access, and analytics.
- **Freemium with premium upgrade:** 15–30 minutes free (adequate for most transit needs); paid upgrade for extended or high-speed access.
- **IoT/smart city integration:** Wi-Fi infrastructure should also support IoT sensors and city services, with municipal funding covering base infrastructure cost and PM-WANI access generating incremental revenue.

### Question 26

*Please provide any additional comments, observations, or suggestions related to the proliferation of Public Wi-Fi in the country, including any potential issues or considerations that may not have been covered in the sections above. Please provide your response in detail with justification.*

### Wiom's Response

Wiom wishes to make the following overarching observations:

- **Constitute a Nodal Agency** — the NPCI for PM-WANI. The PM-WANI ecosystem currently lacks a neutral governing body to bring all stakeholders — PDOs, PDOAs, App Providers, device manufacturers, Government and private entities — together in mission mode toward a shared national connectivity goal. The proposed Nodal Agency, modelled on NPCI's role in UPI, would sit above the ecosystem as neutral infrastructure without competing in it. It would set long-term national hotspot deployment targets, assign clear accountability to each PDOA, monitor ecosystem health, surface on-ground challenges, and publish periodic transparency reports. Existing PDOAs would continue to compete on apps, user experience, and pricing.
- **Mandate a secondary SSID on all ISP-deployed CPE** — and make becoming a PDO a single tap. India has 45+ million wired broadband connections. Directing ISPs to pre-load a PM-WANI-compatible secondary SSID on all CPE — through a firmware update alone — would instantly convert this base into PM-WANI nodes. The device mandate and PDO registration should be collapsed into a single action: a broadband subscriber should be able to opt in to become a PDO through a single tap in their ISP's app, with auto-enrolment into PM-WANI and instant SSID activation. Anyone can become a PDO at the click of a button.
- **PM-WANI and BharatNet must work together to bring affordable internet to every village** — India has already built BharatNet — a fibre network reaching Gram Panchayats across the country — yet it remains chronically underutilised. Repositioning BharatNet as a neutral common conduit — open to any licensed ISP on transparent, standardised wholesale tariffs, backed by strict SLAs and financial penalties for downtime — unlocks this dormant infrastructure. Layering PM-WANI on top as the last-mile distribution engine then delivers affordable sachet internet to rural users at ₹5–10/day, turning a stranded public asset into the backbone of rural digital inclusion.
- **Bring peering and content caching to the block level** — Rural bandwidth is structurally expensive not because BharatNet fibre is unavailable but because every byte still has to travel to a metro IXP or CDN to find its source. NIXI's IXP footprint and the cache nodes of Google,

Akamai, Netflix Open Connect, Cloudflare and Indian OTT platforms must be extended to block-level BharatNet PoPs.

- **Simplify authentication** — browser-based login as a first-class option. Not everyone can use an app to get online. A simple browser-based login — where users connect directly without downloading any app — must be available alongside the app-based option, drawing inspiration from UPI's evolution to QR codes and intuitive journeys. This is not a supplementary feature; it is a prerequisite for reaching the populations PM-WANI is designed to serve.
- **Create visibility of PM-WANI at both ISP and PDO level**— PM-WANI is often perceived as a government scheme rather than a scalable digital architecture. ISPs, who are best placed to seed the PDO ecosystem, are not currently active participants due to low visibility within their own operations. Simultaneously, nationwide campaigns must reinforce affordability (as low as ₹5/day), clarify that becoming a PDO requires no licence, and highlight relatable use cases — online education, OTT, UPI, telemedicine.
- **Build an indigenous PM-WANI hardware ecosystem** — India's UPI lesson. UPI's success is inseparable from the proliferation of low-cost Android smartphones, affordable QR-based POS devices, and domestically manufactured point-of-sale terminals. PM-WANI faces the same dependency. It is recommended : (i) a PLI or design-linked incentive scheme for Indian manufacturers producing PM-WANI-certified CPE and access points; and (ii) formal representation for CPE and hardware OEMs in the governance of the proposed Nodal Agency and its device certification body. These are structural prerequisites — not supplementary measures — for achieving the hotspot density India's connectivity ambitions require.

PM-WANI can be India's next UPI — but it needs the same enabling environment: a Nodal Agency as neutral coordinator, a secondary SSID mandate for scale, BharatNet integration for rural reach, browser-based authentication for inclusion, and an indigenous hardware ecosystem to anchor the supply chain. With these interventions, India's 4.1 lakh PM-WANI hotspots can become 10 million within this decade .