TELECOM REGULATORY AUTHORITY OF INDIA

Consultation Paper No. 07/2026

Proliferation of Public Wi-Fi Networks in India

WRITTEN COMMENTS / RESPONSES

By

Winet Infratel Pvt. Ltd

Preamble

Winet Infratel Pvt. Ltd. is a registered Public Data Office Aggregator (PDOA) and APP Provider operating under the PM-WANI framework. Having deployed and managed a significant network of Public Data Offices (PDOs) across India, Winet Infratel brings practical, ground-level operational experience to this consultation. We welcome TRAI's initiative to reassess the regulatory and policy ecosystem for proliferation of Public Wi-Fi networks in India and commend the comprehensive scope of this Consultation Paper (CP No. 07/2026).

Below are the responses to the Questions in Consultation Paper (CP No. 07/2026).

Q1. 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.

- Inadequate and unaffordable last-mile backhaul: While BharatNet has extended OFC to Gram Panchayats, the last-mile from GP to PDO sites remains unserved or expensive. ISPs frequently quote unviable wholesale bandwidth prices for small PDOs.
- Despite near zero licensing requirements, millions of kirana stores, tea shops, petrol stations, malls, community spaces etc. remain unaware that becoming a PDO can generate supplementary income with minimal setup effort.

Recommended policy measures include:

(a) Provision of BharatNet & BSNL internet capacity at wholesale rates to PM-WANI PDOs on a revenue-share or concessional basis.

(b) A national awareness campaign using PM-WANI brand via Doordarshan, regional Govt. TV Channels, print media, and CSC networks.

Q2. 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.

Key demand-side constraints include:

- Friction in authentication: Multi-step onboarding (app download, OTP, payment) discourages casual users, particularly in low digital-literacy segments. Each additional step reduces conversion rates dramatically.
- Device ecosystem gaps: Users with older smartphones may be unable to run WANI Apps smoothly and are in-compatible with the proposed Passpoint authentication as per clause 2.137 in the Consultation Paper.

Recommended demand-side measures:

Integration of PM-WANI access with existing apps such as UMANG, DigiLocker, UPI Payment Apps and banking apps through API to eliminate standalone app download requirement. Or have PM-WANI as singular app integrating several other facilities other that just for Wi-Fi AP discovery.

Q3. 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.

Geographic unevenness in PM-WANI deployment stems from multiple interdependent factors:

- Urban and high-footfall areas offer higher revenue per hotspot, creating natural spontaneous incentives for PDO/PDOA concentration in metros while Tier-3 cities, small towns and villages remain underserved.
- In areas where neither BharatNet nor private ISP coverage is adequate, PDOs simply cannot operate. Without addressing the backhaul constraint, any hotspot subsidies will have limited impact.

Recommended strategies:

- A dedicated USOF funding scheme should be launched to subsidise and provide loans for PDO hardware deployment in aspirational districts and Gram Panchayats. These program beneficiary PDOs should be subject to mandatory Key Performance Indices (KPIs) including minimum uptime, minimum monthly data dispensed and minimum number of unique users served. In case of sustained KPI non-performance, the program should provide for takeover of operations by the nearest high performing PDO.
- Every BharatNet point-of-presence (PoP) in a village should be required to also host at least 1 to 5 PM-WANI PDO as a default configuration.
- As highlighted in the Consultation Paper states such as Gujarat have demonstrated that a State-sponsored PDOA can achieve wide PDO onboarding through its administrative reach. All States should be encouraged to register as PDOAs and use their networks of CSCs, Panchayat Bhavans and government offices as PDO sites with mandatory advertisement of PM-WANI network availability at building entrance and waiting/reception areas.

Q4. 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.

The current PM-WANI framework lacks mechanisms to guarantee predictable revenue flows to PDOs and PDOAs. Key structural changes required include:

- Currently, roaming revenue when a subscriber of PDOA-A uses a hotspot of PDOA-B is not mandated or standardised. A mandatory roaming settlement framework, where revenue is shared proportional to actual data bytes delivered at each hotspot, will make every PDO a revenue-generating node even if the customer is not acquired by PDOA-B but serving roaming subscribers from PDOA-A and vice-versa.
- TRAI should create a policy for PM-WANI PDOs to access BharatNet & BSNL ILL bandwidth at highly concessional rates & on a revenue-share model. This will dramatically improve PDO unit economics especially in rural areas.
- Under the proposed USOF-funded PDO program the revenue generated from PM-WANI data sales by USOF-beneficiary PDOs should partly flow back to USOF as instalment repayment of the USOF investment till the time the invested money from USOF is re-paid, creating a revolving fund model. The real-time online access on such payment system should be made available to PDOs with clear insights into the re-payment schedule like remaining amount/months etc. In-case of non-performance or continuous default in instalment, KPIs etc., takeover agreement from nearest performing PDOs should be executed with complete ownership transfer of PDO equipment.

Q5 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.

- Physical security of outdoor equipment, vandalism and theft of outdoor access point hardware is a primary concern. Insurance products and physical security standards for PM-WANI marked hardware should be implemented. Such that no second-hand market exists for such stolen hardware without original purchase invoice.
- Entrepreneurs working under the PM-WANI eco-system should have PM-WANI Udyami certificate such as Gold, Silver, Platinum, Bronze/Start-Up Udyami physical certificate sent to their addresses as recognition, which they can publicly display at their business places & advertisement materials and reward incentives upon completion of certain KPIs like monthly data consumption, unique users onboarded, no. of access points deployed etc. such as waiver of certain % on soft loans issued from USOF and/or extended BhartNet/BSNL bandwidth concession or direct cash incentives. State/district-wise, National High performing PDOs should be recognized and rewarded at events such as TRAI/BIF meets. This will initiate and enhance competition among PDOs for performance linked incentives.
- Entrepreneurs under the PM-WANI framework should be given TRAI/DoT sponsored exhibition spaces free of cost at all major events & exhibitions in India and in turn a partnership/combination of PDOs implement PM-WANI PDO network at these high density foot fall places and advertise and distribute PM-WANI WiFi internet coupons to visitors. This creates advertisement opportunities of PM-WANI PDO and improve digital connectivity experiences for visitors.
- Advertisement opportunities at all sporting events either indoor or outdoor should be sponsored by TRAI/DoT and nearby eligible PDOs like Gold, Silver, Platinum PDOs can implement PM-WANI WiFi-mesh network and distribute Wi-Fi coupons with their own advertisements. Temporary BharatNet/BSNL high-volume backhaul bandwidth should be provided at highly concessional rates to PDOs at such sites. All assistance for agreements to be provided with the event organizers, site administrations by DoT/TRAI.

Q6 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.

- Captive portals remain the globally dominant authentication mechanism for public Wi-Fi, particularly in high-footfall locations such as hotels, hospitals, restaurants, airports and transit hubs. They provide a visible user interface for displaying terms of use, collecting consent, enabling payment and showing location-specific information. Mandating their replacement would cause massive disruption.
- Passpoint should be offered as an optional enhancement layer on top of the existing framework, enabling users who have previously authenticated via captive portal or QR-scan to reconnect automatically on subsequent visits.
- A mandatory inter-PDOA roaming agreement should be introduced. Revenue should be settled based on actual data bytes delivered by a PDO to end user while roaming.
- All operators of public Wi-Fi in commercial establishments like hotels, restaurants, malls, public infrastructure like airports, railway stations, bus stands and government premises should be mandated to register as PDOs under the PM-WANI framework. This will vastly expand the hotspot count while bringing existing unregulated public Wi-Fi under a secure, accountable framework. And end users can go-roaming from one street to another under the existing Wi-Fi network itself.

Q7. 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.

We recommend Model (b) as the primary approach – the Government should focus principally on ensuring robust & subsidized backhaul infrastructure and provide targeted funding for Govt. owned and operated PM-WANI site only in areas of market failure.

- The most efficient Govt. investment is in backhaul. Every rupee invested in extending BharatNet-quality fibre to a new location enables tens of PDOs to operate commercially, this multiplier effect is far superior to direct hotspot subsidies.
- ISPs, VNOs and TSPs should be enabled to participate in PM-WANI framework by deploying the PM-WANI backend on their existing infrastructure and converting their home-based routers into shared public access points under the PM-WANI framework. This would dramatically expand PM-WANI coverage at near-zero incremental cost. Also, end users can now roam across various already deployed ISP, VNO, TSP's access points, thus proving a gamechanger in the field of Internet in India.

Q8. 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.

Yes, differentiated strategies are essential.

Rural Strategy:

- BharatNet powered and USOF funded PDOs at Gram Panchayat level.
- Various Govt. office and CSR funded Wi-Fi coupons to registered villagers on a monthly basis.
- Introduction of Simple SMS-OTP based authentication via captive portal.

Urban Strategy:

- Mandating existing WiFi hotspots at shops, cafes, hotels, airport, bus stands etc. to be covered under PM-WANI framework.

Q9. 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.

Outdoor high-footfall areas

- Mandatory PM-WANI registration and integration for all existing publicly accessible Wi-Fi.

- Street furniture integration with all newly installed electric poles, traffic light poles, bus shelters and streetlights to include Wi-Fi access point barbed wire WiFi cage mounting provisions and power supply.
- Physical banner advertising and usage guides at all PM-WANI enabled outdoor sites, manned or digital distribution of physical Wi-Fi access coupons at airports, railway stations, bus stands, metro stations, game events, exhibitions and melas and placement of TV screen-based dynamic digital advertisements at hotspot sites. Advertisement revenues can offset back haul internet charges without or minimal user charges.

Indoor high-footfall areas

Wi-Fi service providers at airports, railway stations, metro stations, bus terminals and government hospitals should be required to operate as PDOs under the PM-WANI framework. This will enable end users authenticate once at some other location to behave as roaming users at these sites without the hurdle of re-authentication also expanding PM-WANI's hotspot count.

- Building ratings for Digital Connectivity should be depended with dedicated conduit and AP mounting provisions.
- Venue owners at high-footfall indoor locations should receive a defined revenue share from PM-WANI data sales and advertising revenues.
- Online portal should be rolled out for users to request PM-WANI site enablement and same to be forwarded to nearby PDOs as business opportunity.

Q10. 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.

We recommend a differentiated layered funding with KPI based incentive architecture rather than a uniform nationwide mechanism.

- USOF grants for PDO hardware deployment with mandatory KPI compliance and revenue share recycle to USOF at villages and low-income settlements.
- High-footfall government locations should have direct budget allocation from the respective Govt. department for PM-WANI deployment at their premises.
- Interest-free/subsidised loans for PDO Udyamis for PDO equipment purchase, repayable from PM-WANI revenues over 3 to 5 years.

Q11. 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.

- Funds allocation should depend on priority installation at low income settlements, uncovered village areas, transit hubs, tourist sites.

Q12. 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.

Yes — unreservedly. Govt. should provide BharatNet/BSNL internet at all PM-WANI promising sites to PDOs at subsidized rates or revenue share model.

Q13. 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.

Yes, targeted government funding for last-mile connectivity is essential through availability of BharatNet/BSNL bandwidth at subsidized rates or through revenue share model at uncovered or underserved areas.

No subsidy required in most cases of high foot fall areas, however, government-owned sites such as railway stations, bus stands, metro stations etc. the relevant Govt. department should provide backhaul as its own network upgrade and the bandwidth should be made available to PDOs at internal or discounted cost.

Q14. Are there any RoW challenges faced by service providers in accessing public places or street furniture to install Public Wi-Fi hotspots? If yes, details may be provided along with suggestions for improvements. Please provide your response in detail with justification.

Yes, RoW challenges will remain a significant operational constraint for PM-WANI deployment. To mitigate such friction and increase speed of deployment, PM-WANI hotspot should be declared as a public utility infrastructure.

Q15. What facilitative roles can State Governments play in accelerating Public Wi-Fi deployment across rural, urban, and high-footfall areas, respectively? Should States consider deploying Public Wi-Fi networks at the municipal and gram panchayat level? Please provide your response in detail with justification.

State Governments can play significant role in deploying PM-WANI hotspots by:

- Enabling CSCs, Panchayat Bhavans, ration shops, healthcare centres as PDO sites.
- All ward offices, public libraries, community halls and municipal parks should be mandatory PM-WANI PDO sites.
- Run regular awareness campaigns for PDO on-boarding at entire state level.

Q16. Should the State Government need to take initiatives to improve the availability of last-mile connectivity for Public Wi-Fi networks? If yes, what measures can incentivise States /municipalities to undertake city- and town-level fiberisation to ensure Public Wi-Fi network proliferation? Please provide your response in detail with justification.

- State-wise rankings in terms of PM-WANI PDO deployment.

Q17. 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.

- Provide municipal assets like streetlights, bus shelters, water tank towers, market buildings for free or nominal-cost for co-location of PM-WANI access points.

Q18. 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.

----------No Response----------

Q19. 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.

----------No Response----------

Q20. 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.

- Mandatory PM-WANI linkage of their existing WiFi infrastructure at commercial establishments such as hotels, restaurants.

Q21. Is there a need to strengthen the role of public or private entities as system integrators for the deployment of Public Wi-Fi networks? If yes, what policy or institutional support may be required? Please provide your response in detail with justification.

----------No Response----------

Q22. Are users experiencing challenges with the authentication and authorization 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.

- Consultation Paper (paras 2.133, 2.137) suggests Passpoint/Hotspot 2.0 as a superior alternative to captive portals. We strongly recommend **against** such policy that mandates replacement of captive portals with Passpoint. Such a mandate would:

  (1) Render all existing PM-WANI captive portal infrastructure non-compliant, destroying investments by PDOs.

  (2) Eliminate the user consent and payment collection mechanism that makes PM-WANI commercially viable.

  (3) Be technically impossible on older smartphones and non-Passpoint-capable devices used by millions of citizens.

  (4) High cost of PDO deployment due to higher (5X) cost of Passpoint enabled access points and related infrastructure.

  (5) Leave every currently installed WiFi hotspots at hotels, cafes and other public places out of the PM-WANI framework. Which can potentially be brought under the PM-WANI framework without any major shift in technology or infrastructure upgrade.

Q23. 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.

Yes, a centralised authentication and payment platform is essential but not mandatory for PM-WANI to scale to its potential. The current fragmented and distributed PDOA architecture creates:

(a) roaming barriers between PDOAs.

(b) PDOAs has to manually identify potential other PDOAs for roaming agreements.

(c) Can cause agreement fallouts during commercial negotiations.

(d) Larger PDOAs or group of PDOAs can potentially create commercial terms unviable for new entrant or smaller PDOAs thus stifling competition and leaving smaller and new entrant PDOAs at mercy of such cartels.

(e) In the absence of a neutral, well-defined, popular technology, roaming integration between PDOAs can create technology barrier and delay in roaming implementation by PDOAs seeking roaming with potential aggregators.

(f) no standard inter-PDOA revenue settlement mechanism. Which can be achieved through data consumption % by the end user across different PDOs or a TRAI recommended revenue calculation methodology.

On the down side of a centralized authentication and payment platform.

(a) Any force majeure event with the centralized authentication platform or payment system may render all new authentication and recharge payments non-functional during the occurrence of such event.

To mitigate such events, it is recommended to have a distributed ledger technology to store users, PDOs and access point information and create failover payment gateways, coupon recharges through physical stores and telephone support.

Q24. What steps are required to achieve interoperability and seamless roaming among Public Wi-Fi networks? Should inter-hotspot roaming be made mandatory, and if so, should a "super-aggregator" be introduced to facilitate it? Please provide your response in detail with justification.

Roaming interoperability is the single most impactful enhancement and differentiator to conventional ISP/TSP led WiFi deployments. A non-integrated ecosystem means that subscribers of PDOA-A cannot seamlessly use hotspots of PDOA-B – a fundamental limitation that undermines the entire proposition of a nationwide public Wi-Fi network.

- Mandatory inter-PDOA roaming agreement similar to how mobile operators have.
- Roaming revenue should be settled on the basis of % of actual data bytes delivered at each PDO.
- In case of a distributed PDOA system, the super-aggregator can function as user authenticator upon request and can scan all the aggregators registered with it for the queried end-user details and his/her plan validity.
- Mandatory PM-WANI registration of all public Wi-Fi combined with mandatory roaming will mean an end-user seamlessly moves from street level PM-WANI to hotel/airport/railway/tourist spots Wi-Fi under a single authenticated session and plan.

Q25. 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.

- Government-funded usage vouchers distributed through CSCs, Panchayat offices and post offices, providing free or at least 50% subsidised internet access. Ensuring PDO revenue viability.
- Corporations with rural operations/CSR mandates to fund free Wi-Fi at designated rural PDO sites. Thus PDOs will have revenue certainty.
- Captive portal advertising, digital screen advertising at hotspot locations and physical banner advertising at premises.
- PM-WANI app enhancement to provide additional services such as EV-Charging, grocery, merchandise delivery, e-commerce, cab/auto/bike/bus/train/flight booking, electronics/mobile phone sales, UPI app, tourist place/movie tickets booking, text chatting etc. from a single unified app.
- PM-WANI networks can be utilized to provide free unlimited access to Govt.'s educational websites, various Govt. examination forms, all other Govt.'s utility websites like aadhar, farmer subsidy, digilocker, passport seva, emergency websites etc. without any subscription from the end users by adding Govt. websites as an exception on the authenticator. GoI or State Govt. may compensate PDOAs & PDOs for providing such facility thus assuring base revenue to PDOs.

Q26. 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.

----------No Response----------

Conclusion

Winet Infratel Pvt. Ltd. submits these responses in the earnest hope that TRAI will contribute to the formulation of a forward-looking, commercially sustainable and digitally inclusive Public Wi-Fi policy for India. If on any point more clarification is required with TRAI, DoT on any of the responses, we will be happy to provide further clarification on it.

Respectfully submitted by,
Winet Infratel Pvt. Ltd.
Authorised Signatory
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