Dated: 12 -08-2025
IAFI/2025-26/L-37

To,

The Under Secretary (Policy),
Department of Telecommunications,
Sanchar Bhawan, 20, Ashoka Road,
New Delhi- 110001

Ref: F. No. 7-2/2024-Policy

Subject: IAFI comments/suggestions on the Draft National Telecom Policy (NTP), 2025, circulated by the Policy Section of DoT on 24-07-2025.

Dear Sir,

The ITU-APT Foundation of India (IAFI) sincerely appreciates the Department of Telecommunications (DoT) for releasing the Draft National Telecom Policy (NTP), 2025. Based on our review of the draft NTP and consultations with our industry partners, IAFI proposes the following 5 overarching Enablers in support of Viksit Bharat ambitions for incorporation in NTP-2025.

Enabler 1. **Increasing focus on supporting India's manufacturing sector and Industries through 4G/5G/6G networks**

Enabler 2. **Reforming the Spectrum management framework in India and refarming the key spectrum bands for meeting the digital connectivity needs of the country.**

Enabler 3. **Bridging the digital disconnect through a combination of 4G/5G mobile services, WiFi-6e and WiFi 7 and NGSO satellites for Direct connectivity.**

Enabler 4. **Strengthening our global presence through increased participation and contributions to international organizations such as ITU, 3GPP, APT, etc.**

Enabler 5. **Increased support for Innovation, R&D, IP creation, startups and MSME.**

- Attachments 1 to 5 provide details of these enablers : Pages 4 to 12;
- Attachment 6 is our summary of the Draft NTP-25: Page 13-14;
- Attachment 7 includes our edits to the draft of NTP-25 in track change mode: Pages 15-35;
- Attachment 8 provides a brief about IAFI – Page 36.

We applaud India's ambitious innovation goals for 2030 which reflect the nation's commitment to becoming a global leader in emerging technologies. The objective to position India among the top 10 global hubs for innovation and research in 5G/6G is

timely as 3GPP continues its work on 5G Advanced and begins consideration of study items for 6G. Achieving a 10% global share in 6G-related IPRs will not only enhance India's competitive edge but also solidify its standing as an emerging technology leader.

The National Telecom Policy 2025 identifies key strategies for achieving this ambitious goal. In particular, incentivizing domestic R&D efforts toward the creation of Standard Essential Patents (SEPs) and encouraging innovation financing by accepting IPRs as collateral are likely to be instrumental for achieving Indian leadership in 5G/6G. Maintaining a robust and reliable patent system is a key ingredient in executing both of these strategies. The ability to commercialize patents, either directly through products and services or indirectly through licensing, provides an important incentive for undertaking the highly risky R&D associated with the development of cellular technology standards. Furthermore, it is well understood that patent ownership enhances a startup's ability to obtain innovation financing but only when there is certainty about the enforceability of those patents.

With respect to the establishment of a Sovereign Patent Fund (SPF), we urge the Department of Telecommunications (DOT) to proceed cautiously and study the need for such a SEP pool and whether the establishment of a SPF will enhance India's ability to achieve its innovation objectives. In particular, the DOT should study the experiences of other countries in establishing SPFs so that India can implement well-informed and effective policies to support its innovation goals.

Satellite communication (Satcom) is a cornerstone of India's vision for a digitally inclusive, globally competitive, and resilient telecom future. By providing targeted policy support—such as equitable funding, simplified regulations, and integration into national initiatives—satcom can create a significant, country-wide impact.

The National Telecom Policy (NTP)-2025 must specifically address the following points:

i. Funding: Dedicate DBN funds to rural satcom projects.
ii. Inclusion: Integrate satcom into all rural broadband programs from the outset.
iii. Efficiency: Establish a unified clearance window for all satcom-related approvals. Recent DoT reforms via NSWS and Saral Sanchar portals are improving regulatory timelines. However, network and frequency clearances still take 3-4 months, involving multiple DoT bodies.
iv. Access: De-license VSAT terminals for commercial distribution to boost accessibility.

The proposed National Telecom Policy 2025 presents a pivotal opportunity to strengthen India's position as a global leader in telecommunications. By strategically implementing the above mentioned five overarching enablers, from modernizing spectrum

management and fostering domestic manufacturing to leading innovation and leveraging satellite technology, India can bridge the digital divide and drive economic growth.

We look forward to collaborating with the DoT to ensure that the National Telecom Policy 2025 as a robust and forward-looking framework. Brief about the ITU-APT Foundation of India (IAFI) is given below for kind information.

Warm Regards,

Bharat B Bhatia,
President, ITU-APT Foundation of India
Vice Chairman - Asia Pacific, World Wireless Research Forum (WWRF)
Chairman, ITU-R WP5D Working Group GA
Chairman, AWG Task group on RLAN
Chairman, Editorial, Vice Chairman, APT Preparatory Group of WRC-27
504, World Trade Center, New Delhi-110001 Phone: +919810173737

Copy to:

1. **Secretary, Telecom**
2. **Addl. Secretary, Telecom**
3. **Joint Secretary, Telecom**
4. **Member T/Member S**
5. **PS to MOC**
6. **PS to MOS-C**

Attachment 1

NTP-25 Enabler - 1

Increasing focus on supporting India's manufacturing sector and Industries through 4G/5G/6G networks

Telecommunications and digital connectivity are foundational to the advancement of Industry 4.0 and Industry 5.0, serving as the critical infrastructure enabling seamless communication, automation, and intelligence across manufacturing and industrial ecosystems. As Industry 4.0 focuses on the integration of cyber-physical systems, IoT (Internet of Things), AI, and data analytics, reliable and high-speed connectivity is essential for real-time data exchange between machines, sensors, and control systems. Technologies such as 5G, fiber-optic networks, and edge computing reduce latency and increase bandwidth, which are key for time-sensitive industrial applications like autonomous robots, smart factories, and predictive maintenance.

Industry 4.0 is all about machines connecting to machines; robots, sensors, actuators and cloud AIs exchanging torrents of data to raise productivity, cut waste and personalise production. The enabler is digital connectivity that is deterministic, low-latency and secure. Ultra-reliable 5G/6G private networks now deliver 1 ms radio latency and "five-nines"(99.999%) availability on the factory floor, allowing real-time motion control of cobots and closed-loop quality inspection at 4 kHz sampling rates. Time-sensitive networking (TSN) over Ethernet backhaul synchronises motion axes within ±1 µs, while edge clouds host AI models that predict tool wear minutes before breakage, reducing downtime by 30–50 %. In warehouses, millimetre-wave positioning tracks pallets and AGVs to 10 cm accuracy, enabling just-in-sequence logistics that compress inventory turns from days to hours. Meanwhile, massive NB-IoT and LTE-M layers knit millions of battery-powered sensors into predictive-maintenance grids that span entire brown-field plants and remote pipelines. The result is a digital twin that mirrors physical reality in real time, turning CAPEX-heavy factories into software-defined assets whose performance can be optimised continuously.

Industry 5.0 adds a human-centric dimension: collaboration between people and machines, sustainability baked into every joule and byte, and resilience against shocks from pandemics to climate change. Here connectivity evolves from "fast pipe" to "context-aware partner". 6G's sensing-integrated air interface can detect worker posture or hazardous gas leaks, dynamically re-routing robots to safeguard humans. Network digital twins fuse environmental, energy and production data so that factories automatically shift loads to renewable-heavy hours, cutting Scope-2 emissions by up to 40 %. Federated learning over secure 6G slices allows SMEs to share AI insights without

exposing proprietary data, democratising advanced analytics across Latin America's automotive, textile and agro-processing clusters. Post-quantum encryption and zero-trust architectures turn the network itself into a cyber-resilience layer, guaranteeing continuity when geopolitical or climatic events fracture global supply chains.

Telecom networks provide the backbone for massive machine-type communications (mMTC), supporting thousands of interconnected devices operating simultaneously. This facilitates advanced process automation and remote monitoring, thereby increasing operational efficiency, minimizing downtime, and improving decision-making. Furthermore, digital connectivity enables cloud-based platforms and digital twins, allowing manufacturers to simulate, optimize, and adapt processes quickly in response to market demands or supply chain disruptions.

As Industry 5.0 emerges, emphasizing human-centricity, sustainability, and resilience, telecom continues to play a pivotal role. Unlike Industry 4.0's focus on automation, Industry 5.0 encourages collaboration between humans and intelligent machines. Ultra-reliable and low-latency communications (URLLC) are critical to ensure safety and precision in human-robot interaction. Moreover, ubiquitous connectivity supports remote work, global collaboration, and inclusive innovation, ensuring that knowledge workers and operators can participate in industrial activities regardless of location.

From Mexico's maquiladoras re-tooled for open-RAN radios to Chile's green-hydrogen data centres powering carbon-negative copper smelters, telecom is no longer a support function; it is the co-creator of value. The same fibre strands and spectrum that deliver WhatsApp to businesses will, with the right policies and investment, deliver precision agriculture to the northeast region, immersive tele-surgery to the remote Andaman and Nicobar Islands, human-centric manufacturing to the entire eastern and western manufacturing plans

In summary, telecom and digital connectivity are not just enablers but accelerators of both Industry 4.0 and 5.0. They connect devices, data, and people in a seamless network, fostering innovation, productivity, and sustainability in the next era of industrial transformation.

Attachment 2

NTP-25 Enabler - 2

Reforming the Spectrum management framework in India and refarming the key spectrum bands for meeting the digital connectivity needs of the country.

India's digital transformation hinges on a modern, flexible, and future-ready spectrum management framework. To meet the growing digital connectivity needs—driven by 5G, IoT, smart cities, and Industry 4.0—there is an urgent need to reform spectrum management organization as well as the allocation policies of India to ensure efficient, equitable, and technology-neutral access. This includes adopting transparent and market-driven approaches such as spectrum trading, sharing, and leasing, while also streamlining administrative procedures. A critical aspect of reform is the refarming of underutilized or legacy spectrum bands—such as the 600 MHz, 700 MHz, and portions of the mid-band (3.3–4.2 GHz)—to optimize their use for high-speed broadband and opening of new bands such as 4, 7 and 15 GHz for next-generation mobile networks.

To break the decades-old bottleneck in spectrum policy, India should reorganize the Wireless Planning & Coordination (WPC) wing by adopting Vietnam's regulator-inside-ministry model: an autonomous, fully funded "Authority for Radio Frequency Management" (ARFM) that sits within—but is not suffocated by—the Department of Telecommunications. Like Vietnam's Authority of Radio Frequency Management (ARFM) and Thailand's NBTC, this body would own the entire lifecycle—planning, pricing, auction design, interference policing and post-allocation audits—while remaining ring-fenced from day-to-day DoT operations through a statutory charter, independent budget and a board chaired by the Telecom Secretary but dominated by technologists, economists and industry representatives. Such a structure would end the current fragmentation where policy, licensing and enforcement are split between WPC, DoT, TEC and state governments, and would create a single, transparent gateway for 5G/6G spectrum road-mapping, public-sector allocations, satellite filings and experimental licenses—mirroring the clarity that has allowed Vietnam to release 5G spectrum two years faster than India and to auction 6 GHz for Wi-Fi without inter-ministerial turf wars.

Attachment 3

NTP-25 Enabler -3

Bridging the digital disconnect through a combination of 4G/5G mobile services, WiFi-6e and WiFi 7 and NGSO satellites for Direct connectivity.

In today's digitally driven world, internet connectivity is no longer a luxury, it's a necessity for economic growth, social inclusion, and access to critical services. Yet, nearly 3.8 billion people still lack reliable broadband access, particularly in rural and remote regions. This global digital divide creates significant disparities, leaving millions excluded from education, healthcare, and modern economic participation.

As technology evolves, several key innovations are helping bridge this gap. Among the most impactful are 4G, 5G and 6G mobile networks, WiFi and industrial technologies, and Non-Geostationary Orbit (NGSO) satellites. Together, these technologies offer hope for universal, high-speed connectivity — even in the world's hardest-to-reach corners.

To achieve such connectivity, spectrum is the key ingredient. It is therefore essential for SATRC countries to develop a strategic spectrum plan to bridge the digital connectivity needs in SATRC countries to provide guidance to the regulators, industries and other stakeholders.

4G networks have already brought transformative change to developing regions. With speeds up to 100 Mbps and low latency, 4G allows users to stream video, attend virtual classes, and use telemedicine services. Countries like India, Kenya, and Indonesia have harnessed 4G to connect millions. For instance, India's Reliance Jio used low-cost 4G plans to bring digital services to rural populations, while in Africa, mobile money services built on 4G networks have empowered unbanked communities. Moreover, 4G can operate in shared or unlicensed spectrum, helping reduce deployment costs in sparsely populated areas. However, it still requires towers, fiber infrastructure, and stable power supplies — making extremely remote deployment costly.

5G technology brings exponential improvements: ultra-fast speeds (up to 10 Gbps), ultra-low latency (under 1 millisecond), and the capacity to support millions of connected devices in one area. While often associated with urban innovations like smart cities or autonomous vehicles, 5G holds transformative potential for rural development too. 5G promises to support **Education**: Virtual classrooms and real-time interaction can finally reach isolated students. In pilot projects, 5G has connected remote schools to top-tier teaching resources, **Healthcare**: From high-definition remote diagnostics to robotic surgery, 5G enables quality medical services to reach underserved populations, **Farming**: Smart agriculture using IoT devices can help farmers monitor soil, automate irrigation, and increase crop yields, and **Small Business**: Entrepreneurs in rural areas can tap into global markets using 5G-powered e-commerce and cloud services.

Still, 5G isn't without obstacles. The technology requires extensive infrastructure and consumes considerable energy. High costs and regulatory challenges can hinder its deployment in low-income, low-density areas. Yet, innovative solutions like solar-powered towers, shared infrastructure, and public-private partnerships are helping bring 5G to rural regions.

WiFi, though often overlooked, plays a vital supporting role. It allows users to share connectivity from mobile networks or satellite links within homes, schools, and villages. Community WiFi setups, where one broadband link powers many users, are especially useful in places were laying fiber or building towers is impractical. Combined with affordable routers and local tech support, WiFi can stretch the reach of mobile and satellite networks at a fraction of the cost. Wi-Fi is moving from "best-effort" to deterministic real-time traffic; ensuring **6 GHz license-exempt access** is now a **prerequisite** for Industry 4.0.

One of the most promising solutions to universal connectivity lies above us — in space. NGSO satellites orbit the Earth at altitudes of 500 to 2,000 kilometers, far lower than traditional geostationary satellites. This enables faster data transfer and lower latency, which are crucial for applications like video calls and online learning. DOT should plan to launch is own NGSO constellation by joining hands with private Indian entities.

NGSO Systems offers the advantages of **Speed and Latency**: NGSO satellites offer near-fiber speeds with latency low enough for real-time services, including telehealth and online education, **Cost Efficiency**: These constellations avoid the need for widespread ground infrastructure, making them ideal for rugged or remote areas, **Global Reach**: NGSO systems can blanket the globe, ensuring no region is left behind, and **Network Resilience**: Their distributed design adds redundancy, improving service continuity even during disasters.

Whether through fiber, cellular towers, WiFi hotspots, or satellites circling the planet, the future of connectivity is about reaching everyone — everywhere.

Access to high-speed internet is the foundation of economic competitiveness, social inclusion, and national resilience. With the combined power of 4G/5G, community WiFi, and NGSO satellites, policy makers now have the tools to bring meaningful connectivity to every citizen.

But the opportunity must be seized with urgency. Strategic policy, forward-thinking regulation, and inclusive investment are critical to ensuring no community is left behind in the digital age.

A connected population is an empowered one — and connectivity should be treated as the infrastructure of opportunity. Ubiquitous connectivity is within reach — but it requires action. Governments, Industries, and global and regional institutions must work together to overcome regulatory, financial, and technological barriers. Strategic investment,

smart policy, and collaborative models can ensure that digital access becomes a global right, not a privilege.

Attachment 4

NTP-25 Enabler - 4

Strengthening our global presence through increased participation and contributions to international organizations such as ITU, 3GPP, APT, etc.

India's digital ambitions must be supported by a strong and proactive global presence in key international standard-setting and policy-making organizations such as the **International Telecommunication Union (ITU)**, **3rd Generation Partnership Project (3GPP)**, and **Asia-Pacific Telecommunity (APT)**. These forums play a critical role in shaping the future of global telecommunications, including spectrum allocation, 5G/6G standardization, internet governance, and digital inclusion frameworks. By increasing its participation and strategic contributions, India can ensure its national priorities—such as affordability, inclusivity, and innovation—are reflected in the global telecom agenda.

Active representation in working groups, working parties, study groups, and technical bodies within these organizations can enable India to influence emerging global standards and contribute to the development of interoperable technologies that align with domestic needs. Enhanced contributions from Indian experts, academia, industry, and regulators to global discussions will also help showcase India's technical leadership and promote its indigenous solutions and platforms on the world stage.

Furthermore, deeper engagement will support the alignment of India's regulatory and spectrum policies with international best practices, fostering a more investment-friendly environment. This also opens up opportunities for Indian startups and enterprises to integrate into global telecom value chains. Ultimately, strengthening India's voice and visibility in international telecom forums is not just a matter of prestige, but a strategic imperative to drive technological sovereignty, global competitiveness, and digital empowerment at scale.

Attachment 5

NTP-25 Enabler - 5

Increased support for Innovation, R&D, IP creation, startups and MSME.

This enabler is already well addressed in the draft NTP-25. However, we propose the following:

1. Vision: Transform India from a "technology adopter" to a "technology originator" for 6G and beyond by 2030, ensuring at least 10 % of global essential 6G patents are filed from India and that every new telecom standard carries at least one Indian technical contribution.
2. Guiding Principles
   - Open, collaborative, standards-based innovation.
   - Public-private co-investment with risk-sharing.
   - IP generated with public funds remains royalty-free for Indian entities, but can be monetised abroad.
   - Spectrum-for-R&D: free or nominal-fee licences for experimental bands.
   - "Test India" ethos – make the country the world's largest living lab for telecom research.
3. Flagship Programmes (2025-30)

Programme	Description	Outlay (₹ Cr)	Lead Agency	KPI (2030)
Bharat Telecom Research Mission (BTRM)	5 Centres of Excellence (CoEs) in 6G, optical, quantum comms, AI-native networks, post-quantum security; each ₹500 Cr endowment + ₹100 Cr annual operating grant.	3,000	DoT	500 PhDs, 50 spin-offs, 1,000 IEEE/3GPP contributions.
Telecom Innovation Fund (TIF)	Matching grants (up to ₹10 Cr per project) for start-ups and MSMEs; 1:1 private co-funding.	2,000	DOT	200 patents commercialised, ₹5,000 Cr follow-on private investment.

Programme	Description	Outlay (₹ Cr)	Lead Agency	KPI (2030)
Spectrum Sandbox Licences	10-year, renewable, zero-fee licences in 450 MHz, 6 GHz, 28 GHz, 60 GHz, 95 GHz for pre-commercial trials.	100 (admin cost)	WPC	1,000 active experimental nodes, 100 global vendors using Indian testbeds.
National Telecom IP Bank	Single-window digital platform to catalogue, value and license IP created under publicly funded projects; fast-track global patent filing support.	300	DOT	5,000 patents filed, 50 % licensed abroad, ₹1,000 Cr cumulative royalty inflow.

4. Regulatory & Fiscal Enablers
- 200 % super-deduction on R&D expenditure for telecom IP creation (sunset 2032).
- Zero import duty on prototypes, network simulators and test equipment.
- Fast-track single-window clearance (≤30 days) for cross-border research collaborations.
- "Patent box" regime: 10 % concessional tax on income from domestically developed telecom patents.
- Mandatory disclosure of Standard-Essential Patents (SEPs) within TEC certification process to curb royalty stacking.

5. International Collaboration
- MoUs with EU Horizon Europe, US NSF Platforms and Japan's Beyond 5G Promotion Forum for reciprocal testbed access and joint PhD programmes.
- India to host the 2028 ITU "Global 6G Test Summit" showcasing Bharat 6G testbeds.

6. Governance & Review
- Apex Telecom Research Council chaired by Minister for Communications – quarterly dashboard against KPIs.
- Independent evaluation by CAG and NITI Aayog every two years; policy auto-sunsets in 2032 unless renewed.

7. Call to Action - Stakeholders are invited to submit comments within 30 days to enable a Cabinet Note by December 2024 and rollout of BTRM CoEs by April 2025.

Attachment 6

A Brief Overview of draft India's National Telecom Policy 2025

India's National Telecom Policy (NTP) 2025, which is currently in a draft stage and open for public consultation, outlines a strategic vision to transform India into a "telecom product nation." The policy aims to leverage emerging technologies and create a secure, inclusive, and sustainable digital communications ecosystem. The NTP 2025 builds upon the foundation of its predecessor, the National Digital Communications Policy (NDCP) 2018, but with more focused and ambitious goals, particularly in the areas of indigenous technology and next-generation services

The policy is built around six strategic missions:

- Universal and Meaningful Connectivity
- Fostering Innovation
- Promoting Domestic Manufacturing
- Ensuring a Secure and Trusted Network
- Enhancing Ease of Living and Doing Business
- Advancing Sustainable Development

Key targets and goals of the 2025 policy include:

1. While the 2018 policy was broad, covering "digital communications," the 2025 policy has a more concentrated focus on the core telecom sector and positioning India as a global player.
2. Achieving 100% 4G coverage and 90% 5G population coverage by 2030. It also aims to increase the fiberization of telecom towers from 46% to 80% and connect all Gram Panchayats with 100% fiber connectivity. The 2025 policy sets concrete, quantifiable targets that were not present in the 2018 policy.
3. Aims for a 150% increase in domestic telecom manufacturing by 2030, establishing Telecom Manufacturing Zones, and doubling the number of telecom startups. The policy also has a goal of attaining a 10% global share in 6G-related intellectual property rights (IPRs).
4. Seeks to create 1 million new jobs in the telecom sector and upskill another 1 million workers. It also targets doubling the sector's contribution to India's GDP and attracting an annual investment of ₹1 lakh crore. The 2018 policy's ambitious target of creating 4 million jobs has been scaled down to a more realistic 1 million new jobs, with an additional focus on up-skilling existing workers.
5. The 2025 policy places a much stronger emphasis on future technologies like 6G, quantum communications, and the use of AI for cyber-security and governance, which were not as central to the 2018 policy.
6. The target for public Wi-Fi hotspots has been scaled down from 10 million in the 2018 policy to 1 million in the 2025 draft, reflecting a more practical and focused approach.

7. The 2025 policy is supported by the new Telecommunications Act, 2023, which provides a modern legal framework for reforms such as uniform Right of Way (RoW) rules to streamline infrastructure rollout.
8. It introduces a comprehensive strategy for using AI in cyber-security, implementing quantum-secure networks, and a mobile number validation service to combat fraud.
9. The "lawful interception" language from the 2018 policy no longer finds a place in the draft New Telecom Policy, which focuses instead on building quantum-secure communications.
10. Focuses on reducing the telecom sector's carbon footprint by 30% and promotes a circular economy. The new policy adds the "circular economy" imperative of recycling materials from telecom equipment in use.

****

Attachment 7

National Telecom Policy-2025
Department of Telecommunications
Ministry of Communication
Government of India
Dated: 24-07-2025

Preamble

National Telecom Policy 2025: Powering India's Digital Future

The **National Telecom Policy 2025 (NTP-25)** outlines India's ambitious vision for its digital transformation, reaffirming the country's strategic commitment to telecommunications as a foundational pillar for economic development, social empowerment, and technological innovation. In an era defined by rapid digital convergence, NTP-25 sets the direction for a resilient, secure, inclusive, and sustainable telecom ecosystem that meets the aspirations of a digitally empowered society and globally competitive economy.

Building upon the achievements of the **National Digital Communications Policy 2018**, NTP-25 proactively addresses to the emerging opportunities and challenges presented by next-generation technologies such as **5G/6G, Artificial Intelligence (AI), Internet of Things (IoT), Quantum Communications, Satellite Network, and Blockchain and the principles of Industry 5.0**. These innovations are fundamentally reshaping global value chains, and India is uniquely positioned to leverage them to bridge the digital divide, foster inclusive growth, drive sustainable industrial transformation and establish itself as a **global digital powerhouse**.

At its core, the Policy is anchored in six strategic missions:

1. **Universal and Meaningful Connectivity:** Ensuring access for all.
2. **Fostering Innovation: p**romote research and deployment of telecom solutions that enable **human-centric and sustainable industrial processes aligned with Industry 5.0 principles."**

3. **Promoting Domestic Manufacturing:** Boosting "Make in India" for telecom equipment.
4. **Ensuring Secure and Trusted Network:** Building robust cybersecurity and data trust.
5. **Enhancing Ease of Living and Doing Business:** Simplifying digital interactions and reducing burdens.
6. **Advancing Sustainable Development:** Ensure climate resilience through energy efficiency, e-waste management, and green infrastructure, **supporting the broader sustainability goals of Industry 5.0."**
7. **Attracting and Facilitating Foreign Direct Investment (FDI):** Creating an enabling environment to draw significant global capital, technology, and expertise into the Indian telecom sector

These missions are supported by clearly defined strategic **goals for 2030** and **targeted strategies**, which collectively aim to:

- Deliver **affordable, high-quality ubiquitous connectivity** to every citizen and institution , by significant domestic and foreign capital infusion.
- Build India's capabilities as a **hub** for **innovation and R&D** in telecom technologies by enhanced collaboration and international investments.
- Drive **self-reliant manufacturing and exports** of telecom equipment by increased domestic production and global partnerships facilitated by FDI.
- Establish robust frameworks for **cyber-security, trust, and national resilience**
- Create a **regulatory environment** that simplifies processes and reduces compliance burdens making India a top global destination for telecom investment.
- Ensure **climate resilience** through energy efficiency, e-waste management, and green infrastructure with the support of advanced technologies and green investments attracted through FDI.
- Achieve an ambitious annual investment target in the telecom sector, largely driven by enhanced FDI inflows, to fuel infrastructure modernization and technology adoption.
- Enhance technology transfer and skill development within the telecom sector, directly benefiting from foreign partnerships and investments.

The Policy would enable an agile, future-ready regulatory and policy ecosystem that promotes collaboration between government, industry, academia, startups, and international standard forums. With this Policy, India aims to emerge not only as a leading consumer of digital technologies, but also as a trusted global provider of telecom products,

services, and solutions. NTP-25 would position India to become the manufacturer of choice of telecom products for the world. It outlines a comprehensive roadmap for investment in research, up-skilling of the workforce, infrastructure modernization, and effective spectrum management to support in a sustainable manner for emerging use cases across smart cities, Industry 4.0 and its evolution to Industry 5.0 , rural broadband, emergency response, and digital governance.

In sum, the NTP-25 sets a bold and inclusive trajectory for the next decade—empowering every Indian with meaningful connectivity, driving innovation-led growth, reinforcing digital sovereignty, and securing India's place in the global digital economy.

Objectives

India stands at a pivotal moment in its digital transformation journey, with the telecommunications sector serving as a foundational pillar for economic growth, social empowerment, and technological advancement. The rapid emergence of cutting-edge technologies such as 5G/6G, Artificial Intelligence (AI) (including Machine Learning), the Internet of Things (IoT), Edge Computing and quantum computing presents an unprecedented opportunity to bridge the digital divide and realize the vision of a digitally empowered nation. The **NTP-25** seeks to build on the progress made under the **National Digital Communications Policy 2018**, while proactively addressing the evolving challenges and harnessing the emerging opportunities of the coming five years.

The NTP-25 aims to accomplish following strategic objectives in Telecom Sector by 2030:

1. **Universal and Meaningful Connectivity for all;**
2. **Double the contribution of the sector to India's GDP;**
3. **Achieve an annual investment of ₹1,00,000 crore**
4. **Double the export of telecom products and services;**
5. **Double the number of telecommunications startups;**
6. **Double the sectoral R&D spending on emerging telecom technologies;**
7. **Create 1 million new jobs**
8. **Upskill/reskill 1 million workers to meet the future demand;**
9. **Strengthen the network security by adopting quantum resistant cryptography;**
10. **Reduce carbon footprint by 30%.**

Vision:

To transform India into a global telecom products and solutions leader driven by cutting edge innovation, ensuring universal, meaningful, and secure connectivity for every citizen, and fostering sustainable growth across all sectors.

Mission:

The NTP-25 comprises of six strategic missions to achieve its objectives:

1. **Universal and Meaningful Connectivity**

   Achieve universal, meaningful and affordable connectivity by *expanding robust telecommunications network*, *improving quality of telecommunication services*, and seamless enhancing the *convergence of technologies and innovative business models.*

2. **Innovation**

   Accelerate innovation by *promoting pioneering research*, *enabling vibrant ecosystem for telecom startups*, and *fostering strong collaboration between industry, academia, and government*, thereby positioning India as a global leader.

3. **Domestic Manufacturing**

   Accelerate economic growth and job creation by *building highly skilled workforce*, attracting significant *investments in telecom manufacturing*, and *supporting indigenous design and value addition* and the integration into resilient global supply chains, to position India as a trusted global hub for telecom equipment manufacturing.

4. **Secure and trusted Telecom Network**

   Build a secure and trusted telecom ecosystem by *enhancing the security measures*, *promoting robust cyber hygiene*, and enhancing the safety, integrity, and reliability of all digital communication infrastructure and data..

5. **Ease of Living and Ease of Doing Business**

   Empower citizens and businesses by *simplifying access to telecommunication services*, *fostering an inclusive digital ecosystem*, and *creating an* streamlined, transparent, and *enabling business environment* that attracts both domestic and foreign investment.

6. **Sustainable Telecom**

7. To lead the transition to a sustainable future by *promoting green telecom technologies, embedding sustainability and circular economy*, and *increasing reliance on renewable energy sources*, thereby reducing carbon footprints for a cleaner and greener environment in line with Industry 5.0 principles.**Attracting & Facilitating Foreign Direct Investment (FDI):**

   Strategically cultivate an attractive environment for substantial foreign direct investment, actively drawing global capital, cutting-edge technology, and international expertise into India's telecom sector to accelerate growth, enhance competitiveness, and drive technological self-reliance.

Mission 1: Universal and Meaningful Connectivity

Goals for 2030

a. Cover 100% population by 4G and 90% by 5G/5G Advance and expanding broadband coverage to cover 100% indoor users by leveraging mix and match of various suitable technologies;.
b. Accessibility of devices for all (this needs clarification);
c. Increase fiberization of Towers from 46% to 100%;
d. Achieve fiberization of all Gram Panchayats (GPs) under BharatNet with an uptime of over 98%;
e. Enable fiber connectivity to all government institutions at the village level;
f. Enable proliferation of fixed line broadband network to 10 Cr households in the country;
g. Establish a flexible and supportive regulatory framework for satellite services to enhance **c**onnectivity for un-served or underserved areas;
h. Expand telecommunications network by promoting use of Non-Terrestrial Network (NTN) including HIBS, HAPS, Direct to Cellular satellite communication systems;
i. Improve quality of telecommunications network in outdoor and indoor areas;
j. Formulate stringent QoS parameters for network availability (wireless/wireline), Broadband (wireline) service and customer services, focusing on Quality of Experience (QoE) and utilizing crowd-sourced data;
k. Establish a time-bound, transparent, and standardized framework for QoS testing;
l. Achieve top 20 ranking in the ICT Development Index;
m. Deploy 10 million public Wi-Fi hotspots, including using PM-WANI;
n. Complement resilience of National Long Distance (NLD) telecommunication via use of submarine cable.

o. Adopt satellite based Direct-to-cellular connectivity from satellite for ensuring coverage of rural and remote areas;

p. Sunset of 2G/3G Technology by 2030 in India.

Strategies

1. Expanding Telecommunication Network

1.1 Devise Digital Bharat Nidhi (DBN) schemes to expand mobile network in underserved rural, remote, and urban areas, DBN (Digital Bharat Nidhi) funds, accumulated from licensed telecom and satcom providers, must be equitably allocated to satcom service providers for rural and remote deployments.

Notably, no DBN funds have been directly allocated to satcom providers to date—a critical gap that needs immediate redressal, specifically when Satcom can offer immediate connectivity to the unconnected locations.

Key national programs like BSNL's 4G Saturation, BharatNet Phase III, and school broadband initiatives must have dedicated satcom components with earmarked DBN support for terrestrial non-feasible locations without having to wait for years.

DBN funds for preparing NDRF and SDRF like agencies to be equipped for quick-response in the event of a disaster

1.1. Introduce incentive schemes for proliferation of fixed line broadband in rural/remote/hilly area;

1.2. Facilitate high-speed radio links for last-mile broadband connectivity;

1.3. Achieve broadband coverage in all inhabited areas using combination of suitable technologies;

1.4. Align National Broadband Mission (NBM) to address deployment challenges;

1.5. Leverage BharatNet to fiberize towers and connect public institutions;

1.6. Utilize Optical Ground Wire (OPGW) from the power sector for remote/hilly regions;

1.7. Map telecom assets on PM GatiShakti NMP and develop GIS-based planning tools;

1.8. Enhance Call Before u Dig (CBuD) App for underground infrastructure coordination;

1.9. Enable light-touch authorization for submarine cable infrastructure for domestic connectivity;

1.10. Promote hybrid access through Mobile, FWA, FTTH, Satellite, Wi-Fi, HAPS, etc.;

1.11. Explore feasibility of community Wi-Fi network;

1.12. Promote public Wi-Fi in tourist/public areas and ensure affordable tariffs for Public Data Offices (PDOs) under PM-WANI.

2. Promoting Advanced Technologies and Satellite Integration

2.1. Facilitate transition to Network Virtualization and Software-Defined Network (SDN);
2.2. Encourage scalable, programmable architectures for massive IoT;
2.3. Support edge computing and cloud integration for AR/VR, smart factories, autonomous vehicles;
2.4. Prioritize release of spectrum for IMT, mm-Wave, and sub-THz for 6G;
2.5. Align NTN policy with Indian Space Policy 2023 to enhance satellite communications;
2.6. Enable Ground Station as a Service (GSaaS) from India;
2.7. Set up SATCOM Use Case Labs for socio-economic applications;
2.8. Promote sharing of SatCom network for affordable, ubiquitous access;
2.9. Strengthen India's international engagement (e.g. ITU) to secure orbital slots and ensure spectrum sustainability.

3. Improving quality of telecommunication services

3.1. Review QoS benchmarks emphasizing Quality of Experience (QoE) and real user data;
3.2. Harmonize QoS standards with global benchmarks for indoor and outdoor services;
3.3. Redefine minimum acceptable signal strength and broadband speed;
3.4. Roll out Digital Communication Readiness Index (DCRI) in a time-bound manner;
3.5. Integrate telecom towers in NDMA disaster recovery protocols;
3.6. Promote transparency of telecom coverage and signal strength;
3.7. Encourage low-latency communications for industrial (industry 4.0 and 5.0), medical and auto-driving applications.

4. Embracing the convergence of technologies and business models

4.1. Ensure telecom/broadband services cost less than 2% of monthly GNI per capita (UN SDG 9- Target -**The updated target:** In 2018, the Broadband Commission adopted a more ambitious target, calls for entry-level broadband services to be affordable in low- and middle-income countries at less than 2% of monthly GNI per capita by 2025**)**;
4.2. Incentivize small ISPs for last-mile broadband delivery in rural/remote area;
4.3. Facilitate convergence of NTN and terrestrial network for seamless access;
4.4. Enable convergence of services such as TV and e-Governance over telecom infrastructure;
4.5. Promote infrastructure sharing among TSPs and utility sectors;
4.6. Encourage common ducting in smart cities, highways and linear infrastructure projects.

Mission 2: Innovation

Goals for 2030

a. Position India among the top 10 global hubs for innovation and research in emerging technologies such as 5G/6G, AI, IoT, Quantum Communications, etc.;
b. Create an innovation centric section 8 company (innovation-centric non-profit company);
c. Attain 10% global share in 6G-related IPRs (Intellectual Property Right);
d. Enhance India's contribution and participation in global technology standards and intellectual property (IP) and Standard Essential Patent (SEP) creation to position the country as a global leader;
e. Co-create specific use case of Digital Twin in collaboration with different Ministries/Departments;
f. Make spectrum available for R&D (regulatory sandbox) with minimal compliance requirements and in alignment with global best practices and standards;
g. Transform C-DOT into a Telecom R&D institution of excellence to foster innovation in next- generation telecommunication technologies;
h. Handhold 500 tech startups and MSMEs specializing in emerging technologies in the telecommunications sector;
i. Promote collaborations with global and regional standards development organizations, as well as industry forums, to develop standards as per regional and local market requirements;
j. Establish 10 centers of excellence for R&D and commercialization of emerging telecom technologies;
k. Promote spirit of "Vishwabandhu" by deploying advanced indigenous telecom technology to at least 10 countries [especially Small Island Developing States (SIDS), Landlocked Developing Countries (LLDC) and Least Developed Countries (LDC)].

Strategies

1. Promote Cutting-edge Research

1.1. Fund R&D projects in emerging technologies, including AI/ML, edge computing, quantum security, quantum communications, blockchain, AR/VR and 5G/6G;
1.2. Streamline the R&D ecosystem including funding, testing, certification, pilot / Proof of Concept (PoC) facilitation, commercialization and market access;
1.3. Promote R&D in indigenous Telecom Chipset Development to accelerate the design of chipsets for telecom equipment;
1.4. Collaborate with industry to establish a section 8 company focused on promoting innovation;
1.5. Promote setting up of regulatory sandboxes;

1.6. Allow experimentation in Terahertz (THz) bands taking into account both current and future requirements for emerging technologies;

1.7. Introduce a new experimental authorization for the spectrum in the 95 GHz to 3 THz range

1.8. Authorization and assignment –exempt regulatory sandbox for 6G trial and R^D works to be encouraged and to be permitted in the 4400-4800 MHz, 7175 -8400 MHz and 14.8-15.35 GHz or parts thereof in India;

1.9. Authorisation and assignment-exempt operations to be permitted in the 116-123 GHz, 174.8-182 GHz, 185-190 GHz, and 244-246 GHz frequency bands or parts thereof in India;

1.10. 77-81 GHz frequency range to be opened for authorisation and assignment-exempt operations of automotive radar systems in India;

1.11. 5875-5925 Mhz frequency range to be opened for authorization and assignment – exempt operations of C-V2X automotive safety systems in India;

1.12. Introduce experimental authorization for telecommunication network and services;

1.13. Identify assignment-exempt spectrum bands for proliferation of machine-to-machine (M2M) communication;

1.14. Open greenfield bands for emerging technologies such as IOT, M2M, V2X, D2M etc.;

1.15. Accelerate public R&D investment by improving the utilization of Digital Bharat Nidhi (DBN);

1.16. Launch a Technology Readiness Level funding program;

1.17. Explore the establishment of a Sovereign Patent Fund with an objective of creating Standard Essential Patent (SEP) pool for widely used Telecom Technologies;

1.18. Support the development of Standard Essential Patents (SEPs) in emerging technologies by incentivizing domestic R&D efforts;

1.19. Explore the feasibility of accepting IPRs as collateral by financial institutions to support innovation financing;

1.20. Augment C-DoT's resources through projectized proposals.

1.21 Enable innovative Satellite-based IoT for smart agriculture, fleet tracking, fisheries, telemedicine, and more, as it can provide lifeline to fishermen and farmers dealing in most difficult working conditions. CAPEX support can help all boats have some kind of connectivity.

1.22 For National Security, Satcom has a significant role to play, be it Data Sovereignty, Border Surveillance (high speed services through LEO, GEO, IoT Terminals), Network Resiliency, high speed data links for Unmanned Aerial Vehicles etc.

2. Enable Telecom Start-ups

2.1. Provide funding and mentorship from government/industry to telecom startups across growth stages, focusing on product development and market access;
2.2. Introduce innovative financing models like Funds of Funds, Blended Finance etc., to expand funding opportunities for the pool of Telecom Startups in India;
2.3. Organize annual events/competitions with government supported rewards and grants for winners, to encourage startups and innovators to develop cutting-edge telecom solutions.

3. Foster Collaboration between Industry, Academia, and Government

3.1. Establish Tech Incubation Hubs in collaboration with academic institutions and industry to promote cross-sector collaboration and accelerate technological innovations;
3.2. Facilitate research collaborations between educational institutions and private enterprises to develop applications using technologies such as AI, IoT, Blockchain, quantum computing, 5G/6G, robotics etc;
3.3. Encourage collaboration in R&D by supporting G2G, G2B and B2B engagements in standards development and patenting;
3.4. Encourage international academic exchanges and global joint research projects;
3.5. Collaborate actively with DPIIT / Office of the Controller General of Designs and Trademarks to enhance the capacity of Telecom specific Patent Examiners;
3.6. Create Telecom Data Regulatory Sandbox to enable effective utilization of anonymized telecom data for public benefit;
3.7. Develop a framework for accepting IPRs as collateral by financial institutions to support innovation financing.

4. Advance Standards and Global Leadership

4.1. Advance development of telecom technologies through open, transparent and consensus driven processes in global Standards Development Organizations (SDOs) like 3GPP, encouraging participation from industry and academia to drive innovation and interoperability;
4.2. Strengthen Standard Development Organisations (SDOs) to develop more standards and encourage/fund participation in international standards development forums of those effectively contributing to development of relevant technology and standards especially MSMEs, Startups, Academia and public sector R&D organizations;
4.3. Explore the inclusion of standards development activities carried out in government recognized Standards Development Organisations (SDOs) under CSR funding;

4.4. Launch 6G Research and Innovation PhD Program in collaboration with Bharat 6G Alliance.

Mission 3: Domestic Manufacturing

Goals for 2030

a. Increase domestic telecom manufacturing output by 150%, with emphasis on localization and design-led manufacturing;
b. Achieve 50% import substitution through telecom products designed, developed, and manufactured in India;
c. Establish a Telecom Manufacturing Zone (TMZ) with integrated infrastructure for enabling telecom and network equipment design and manufacturing ecosystem;
d. Facilitate the establishment of end-to-end supply chain for manufacturing of telecom and network products in India;
e. Establish 30 advanced research labs across top academic institutions;
f. Establish an Indian Institute of Telecom Technology (IIT2) to develop industry-ready talent pool and drive cutting-edge research;
g. Strengthen the Telecom Sectoral Skill Council (TSSC) to enhance telecom workforce readiness;
h. Fund Research fellowships and training/skilling activities in the Telecom sector;
i. Generate 1 million new jobs (direct and indirect) in telecom sector.

Strategies

1. Build Skilled Workforce

1.1. Develop industry-aligned courses on subjects such as telecom engineering, electronics design, AI, cyber-security, 5G/6G, IoT, and quantum communication;
1.2. Implement and institutionalize apprenticeship and internship programs in telecom sector in line with PM's Internship Scheme;
1.3. Sponsor partnership programs between industry and academia (including DoT training institutes) to bridge skill gaps in high tech telecom technology areas;
1.4. Strengthen the Telecom Sectoral Skill Council (TSSC) for skilling activities at regional level in collaboration with state governments and other stakeholders;
1.5. Leverage 5G/6G use case labs for providing trainings in advance mobile technologies;
1.6. Engage DoT field units in promoting telecom skilling initiatives.

2. Encouraging Investments in Telecom Manufacturing

2.1. Provide targeted CAPEX/OPEX support to boost domestic telecom manufacturing;

2.2. Incentivize Telecom and networking Software Development;
2.3. Incentivize telecom operators to use indigenously designed and manufactured equipment;
2.4. Promote "Made in India" telecom products globally through brand building activities, with a focus on innovation and quality assurance;
2.5. Encourage investments in partner countries leveraging Line of Credit;
2.6. Enhance export competitiveness of Indian telecom products by streamlining regulations;
2.7. Simplify and rationalize telecom equipment certification processes;
2.8. Strengthen ranking framework for labs accredited by TEC.

3. Support Design and Value Addition

3.1. Introduce support mechanisms for design-led manufacturing and enhancing domestic value addition;
3.2. Make available spectrum for Captive Non-Public Network (CNPNs) and private 5G for industrial use cases;
3.3. Incentivize strengthening of testing and certification lab ecosystem;
3.4. Facilitate Testing and Certification of Indian telecom products for foreign markets;
3.5. Explore Mutual Recognition Agreements for conformity assessment and testing;
3.6. Harmonize Indian testing requirements with the global requirements;

Mission 4: Secure and Trusted Network

Goals for 2030

a. Enhance security measures for GoI and state institutions;
b. Enhance security measures for telecom service operators;
c. Establish National Telecom SafeNet to protect national telecom network;
d. Establish a biometric based identification for all telecom users to ensure privacy and protection;
e. Achieve 50% reduction in response time in mitigating telecom cyber-security incidents;
f. Monitor effectively the border areas for cross-border spillage;
g. Conduct telecom cyber-security audits of telecom network to ensure resilience against emerging new age cyber threats;
h. Monitor effectively satellite communications to ensure cyber-security, data integrity, and protection against unauthorized access or interference;
i. Enable trusted hardware/software supply chains.

Strategies

1. Enhancement of Security Measures

1.1. Incentivize early development of security measures for future threats;
1.2. Roll-out of quantum secured products;
1.3. Develop telecom infrastructure that are secure against both quantum and classical computers, and can interoperate with existing communications protocols and telecom network;
1.4. Support cryptographic agility and a quantum-safe upgrade path for telecommunications network;
1.5. Prepare for quantum communications and Quantum-Safe Cryptography (QSC) to secure telecom data;
1.6. Promote end-point security for telecom network device by deployment of indigenous endpoint detection & response solution;
1.7. Promote 100% IPv6 adoption for proliferation of internet-connected devices;
1.8. Enforce cyber-security frameworks based on adoption of AI/ML technologies such as AI Incident Reporting used in telecom services and network;
1.9. Develop AI-specific telecom security standards to address risks from adversarial AI, model drift, and automated threat propagation;
1.10. Define policy and regulatory framework for blocking rogue IPs/URLs/Applications and its implementation in TSP/ISP network;
1.11. Strengthen national capability in telecom-specific cyber-security threat intelligence, response, and recovery;
1.12. Finalize the blueprint of National Telecom SafeNet with close collaboration with MHA, TSPs and LEAs and expedite sanction of project and its funding;
1.13. Establish a mechanism to oversee and verify connected telecommunication equipment as trusted products with valid Certificates of Conformity.

2. Promotion of Cyber Hygiene

2.1. Develop human resource and infrastructure for implementation of Telecom Cyber Security Rules, 2024 and Critical Telecommunications Infrastructure Rules, 2024;
2.2. Evolve a comprehensive Cyber-security Skills Framework, in consultation with stakeholders, to define critical competencies for roles such as Security Administrators, Security Analysts, and Penetration Testers;
2.3. Strengthen Telecom CSIRT for cyber security incident reporting & mitigation including CTI monitoring;
2.4. Examine and promote implementation of minimum cyber-security controls for all telecom operators, based on global standards;

2.5. Host annual events/competitions for robust testing of telecommunication network and create awareness for best practices.

3. Ensure Safety and Trustworthiness of Telecommunications Network

3.1. Enhance monitoring mechanisms to ensure that only standardized, security-certified, and trusted telecom equipment are used in critical infrastructure;
3.2. Develop AI and other technology-based tools for detection and prevention of cyber frauds using the telecom ecosystem;
3.3. Define a framework for telecom security audit & empanelment of agencies thereof;
3.4. Establish the SATCOM Monitoring Facility (SMF) to monitor Indian and foreign satellites and improve mitigation of satellite carrier interference;
3.5. Increase monitoring of radio frequency and establish Wireless Monitoring Stations along the border areas to reduce cross-border spillage;
3.6. Put in place adequate and effective regulatory framework to prevent misuse of Telecom Identifiers (including IMEIs);
3.7. Put in place adequate and effective regulatory framework and systems to detect and prevent unsolicited commercial communication (UCC)/ spam;
3.8. Conduct analysis of telecom and networking equipment deployed in TSP network to demarcate and segregate equipment from non-trusted sources;
3.9. To continuously engage with relevant stakeholders like TSPs/ISPs, law enforcement agencies, financial sector entities to prevent misuse of telecom resources for cybercrime;
3.10. To introduce Mobile Number validation Service for providing a secure telecom space to other services sector entities like banking, insurance, social media, e-governance etc. for prevention of misuse of telecom resources for cyber frauds;

3.11. Citizen empowerment and engagement through portal, app and tools offered through 'One Stop Solution' to prevent misuse of telecom resources for cybercrime and financial frauds;
3.12. Promote community outreach and public awareness campaigns on safety and trustworthiness of telecom network and services;
3.13. Engage with global partners to develop shared strategies, best practices, and cross-border frameworks to tackle international spam, fraud and phishing, reinforcing India's role as a trusted digital nation;
3.14. Formulate mandatory business continuity and disaster recovery frameworks for telecom network to ensure resilience during physical or cyber disruptions;

3.15. Ensure secure integration of emerging technologies (quantum, edge AI, IoT, MEC, NTN) into the trusted network framework;

3.16. Establish Centre for Excellence (COE) for promoting and enhancing use of Artificial Intelligence in Telecom Cyber Security.

Mission 5: Ease of Living and Doing Business

Goals for 2030

a. Reduce average time for grievance redressal by 50%;
b. Enable centralized registration and aggregation of demand for fixed line broadband in rural areas across the nation;
c. Scale up Samriddh Gram initiative showcasing enhanced telecom services in one village per block;
d. Implement Telecommunications Act, 2023 following Digital by Design;
e. Onboard all major stakeholders of Telecommunication (Right of Way) Rules, 2024 on RoW portal;
f. Ensure implementation of composite electricity billing system for TSPs/ISPs/ISPs;
g. Reduce compliance burden for retail and enterprise business;
h. Reduce the time for granting authorization and assignment of spectrum by 50%;
i. Enhance the utilization of spare capacity of optical fiber backhaul by 40%;
j. Identify non-optimal utilization of spectrum and re-farm for re-assignment to telecommunication services basis need.
k. Establish a true Single-Window System for approvals (network, frequency, import licensing) to reduce deployment lead time.
l. De-licensing of VSAT Terminals - VSAT terminals, which only connect to licensed hubs, should be exempt from the Indian Wireless Telegraphy Act, for easier availability via e-commerce and open retail channels, eliminating the need for Dealers Possession License (DPL).

Strategies

1. Simplify Access to Telecommunication Services

1.1. Implement in-building solutions and encourage adoption of rating of buildings w.r.t telecommunication connectivity by town planner/municipal bodies (Tier 1 and Tier 2);

1.2. Study and devise special packages for minimum usage as per ICT Development Index 2024 for ensuring affordability for lower economic strata of the society;
1.3. Work in collaboration with MHA to establish a resilient Public Protection and Disaster Relief (PPDR) network;
1.4. Adopt intelligent, integrated and data-driven infrastructure planning through initiatives like Digital Twin in various sectors;
1.5. Explore the possibility of segregation and rationalization of compliances for retail and enterprise businesses.

2. Fostering an inclusive digital ecosystem

2.1. Streamline grievance redressal process through unified portal and use of AI, Chatbots etc.;
2.2. Promote unified information system for all telecom services in vernacular languages;
2.3. Enhance awareness to address the concerns of citizens related to EMF radiation of telecommunications towers;
2.4. Create a single window support system for resolving issues pertaining to telecommunications sector;
2.5. Organize capacity-building programs for Central Ministries, States and public institutions like Districts, Schools, Colleges etc. on 5G and BharatNet use cases;
2.6. Encourage pilot projects related to use cases of 5G and BharatNet network;
2.7. Scale up the successful pilot projects at pan-India level including Samriddh Gram.

3. Create Enabling Business Environment

3.1. Develop end-to-end online solution for all compliance reporting, encouraging self- declarations wherever possible;
3.2. Collaborate with states and UTs and Ministry of Power through NBM institutional framework to implement composite billing system for all TSPs/ISPs/IPs;
3.3. Promote use of RegTech and code-based modalities;
3.4. Explore the possibility of deemed approval beyond prescribed time limits for different regulatory and licensing/authorization activities within the department;
3.5. Promote active and passive infrastructure sharing and implement regulatory framework for the same;
3.6. Conduct study on Regulatory Impact Assessment for improvement of regulatory environment and practices;
3.7. Develop Framework to enable and encourage spectrum sharing, leasing, trading and secondary usage Ensure adequate availability and efficient utilisation of spectrum through refarming;
3.8. Undertake spectrum audit of Central, State Government and PSUs on regular basis;

3.9. Delegate the frequency assignment activity to the regional level to enhance accessibility and expedite spectrum allocation for wireless users;
3.10. Ensure adequate availability and efficient utilization of spectrum through refarming;
3.11. Develop a dynamic National Spectrum Roadmap updated every two years, aligned with ITU- R WRC cycles and industry needs.

Mission 6: Sustainable Development

Goals for 2030

a. Reduce the carbon footprint from the telecom service sector by 30%;
b. Facilitate the development and adoption of energy-efficient network by Telecom industry;
c. Adopt and implement the "Green Energy Open Access" framework;
d. Promote transition of the telecom industry to renewable energy sources;
e. Achieve renewable energy adoption for 30% of telecom towers;
f. Facilitate telecom companies in the implementation of comprehensive e-waste management framework;
g. Develop sustainability standards in the telecom sector;
h. Integrate the Telecom Sector with Indian Carbon Market;
i. Facilitate the development of telecom infrastructure that is resilient to climate change and fosters long-term environmental sustainability.

Strategies

1. Promote Green Telecom Technologies

1.1. Encourage the use of AI-enabled management system to optimize energy consumption;
1.2. Facilitate the implementation of "Green Energy Open Access" framework by collaboration with States and UTs for enhancing the use of green/renewable energy in the telecom sector;
1.3. Facilitate continuous reduction in carbon footprint from the telecom sector by educating and incentivizing suppliers and customers, as well increasing the product lifecycles of telecom equipment.

2. Promote Sustainability and Circular Economy Model

2.1. Encourage and incentivize the design of products and services, conforming to Circular Economy principles and efficient green energy technologies;

2.2. Facilitate product stewardship programs that ensure responsibility for the entire product life cycle, including end-of-life disposal, through collaboration among governments, businesses, and consumers;
2.3. Develop National Standards for promoting circularity for telecommunications sector, aligned with the internationally recognized standards;
2.4. Introduce e-waste recycling mandates for telecom manufacturing companies, encouraging manufacturers to adopt Circular Economy models by reusing and recycling telecom equipment;
2.5. Promote R&D in areas of sustainability and Circular Economy in Telecom Sector;
2.6. Incentivize telecom products conforming to circularity in public procurement;
2.7. Incentivize telecom products conforming to circularity through suitable enabling modifications in the existing DoT Schemes and new schemes;
2.8. Develop courses on Circular Economy in Telecom, in association with AICTE and other academic/ industry experts, for engineering colleges, polytechnics, ITIs, etc.;
2.9. Promote the use of refurbished products that have similar level of warranty support from vendors;
2.10. Coordinate with Department of Consumer Affairs for on boarding of Telecom Equipment on the Right to Repair Portal;
2.11. Formulate rating framework for telecom infrastructure resilient to climate change and incentivize its adoption;
2.12. Establish a Centre of Excellence (CoE) on "Sustainability in Telecom Sector";
2.13. Collaborate/facilitate relevant ministries/departments for a resilient Public Protection and Disaster Relief (PPDR) network with harmonized spectrum plans, AI-powered predictive analytics, and IoT-enabled systems for resource mobilization.

3. Increase Reliance on Renewable Energy Sources

3.1. Promote energy efficiency at component, equipment/system and network/service level through energy consumption rating and classification of energy passport;
3.2. Promote the use of renewable energy sources for powering telecom network;
3.3. Ensure capacity building in educational institutions.

Mission – 7: Attracting and Facilitating Foreign Direct Investment (FDI)

a. Goals for 2030

1. To achieve an annual investment of ₹1,00,000 crore in telecommunications infrastructure, require a substantial contribution from foreign investors.
2. Increase the telecom sector's share of India's GDP, by new investments, including FDI.
3. Increase the domestic production of telecom equipment by 150% and achieve 50% import substitution, with FDI playing a crucial role in bringing in technology and capital for manufacturing.
4. Attracting more FDI for securing 10% share of global Intellectual Property Rights (IPR) in 6G technology and India as a global hub for telecom equipment manufacturing and emerging technologies.
5. Encouraging foreign companies for setting up manufacturing bases in India through FDI, to double the export of telecom products and services.

b. Strategies

1. Maintain and promote the existing policy that allows 100% FDI in the telecom sector under the automatic route, making it one of the most liberal FDI regimes.
2. Continue to leverage and expand the Production Linked Incentive (PLI) scheme for telecom and networking products.
3. Simplifying Regulations, Streamline regulatory processes to reduce the bureaucratic burden on companies for "Ease of Doing Business".
4. Develop "National Single-Window System" like the PM GatiShakti National Master Plan (NMP) and the CBuD App to provide a transparent, GIS-based planning tool and a single-window clearance system for infrastructure projects.
5. Encourage Technology-Specific Investments like Satellite Communications by establishing a flexible and supportive regulatory framework for satellite services (NTN) and Ground Station as a Service (GSaaS).
6. Encourage global major NGSO satellite operators like Starlink, Eutelsat OneWeb, and others, for attracting more FDI.
7. Promote the Bharat 6G Alliance to make India a leader in 6G technology, to encourage foreign companies to collaborate and invest in India's R&D ecosystem.
8. Strengthen legal frameworks and dispute resolution mechanisms to boost investor confidence.
9. Proactively engage in international forums and brand-building activities to promote India as a reliable and competitive destination for telecom manufacturing and investment.

–End-

Attachment 8

ABOUT IAFI

The ITU-APT Foundation of India (IAFI) is a Registered non-profit, non-political industry Foundation. IAFI key focus is to support participation of the private sector in the activities of the ITU and APT. We look after the interests of the telecommunications and ICT sector in the Asia Pacific Region for all ICT technologies, services and platforms including GSO and NGSO satellites, Mobile services including 4G/5G/6G, Wi-Fi, etc.

IAFI serves as a vital platform for industry stakeholders, to participate in ITU, APT, WWRF, FCC, CEPT, etc. IAFI is recognised as a Regional/ International organisation by the ITU and has been granted sector membership of ITU-R, ITU-T and ITU-D. IAFI is also an affiliate member of APT (Asia Pacific Telecommunity). IAFI participates in various ITU and APT meetings and has been submitting over 100 contributions to all sectors of ITU and APT every year.

During last 5 years, IAFI has taken up leadership roles in various ITU and APT meetings, groups and Forums.