In-depth | The Indian Telecom Revolution | 19 January, 2025

For Prelims: [Digital India initiative](), Bharat 6G Vision and Bharat 6G Alliance (B6GA), [PM-WANI](), [Telecommunication Act, 2023]()

For Mains: Current State of the Telecom Sector in India, Various Telecom Reforms in India, Impact of Indian Telecom Revolution, Challenges Related to the Telecom Sector and Way Forward

Why in News?

The **[Indian telecom sector]()** has evolved during the last two decades in terms of growth and competition. Today, the telecommunications sector in India is the **second largest in the entire world** and caters to more than a billion, contributing **6% to its overall [Gross Domestic Product (GDP)]()**.

What is the Current State of the Telecom Sector in India?

- **The Transformation of India's Telecom Sector**
  - The Indian telecom sector's evolution **from a luxury to a necessity** is a testament to the country's remarkable progress in connectivity and affordability.
    - **Key Milestones in Telecom Accessibility and Growth:**
      - **2000:** Seamless connectivity was considered a luxury, affordable only to a selected few.
      - **2001:** Telephone penetration was just 3.5 connections per 100 people, making phone calls inaccessible for a large portion of the population.
      - **2024:** Telecom density soared to 85.6%, marking a substantial improvement in accessibility and connectivity.
  - This transformation highlights how the sector has reshaped lives by making **seamless communication** accessible to all.
- **Growth in Data Consumption and Infrastructure Development**
  - The Indian telecom sector has witnessed significant advancements in **[wireless data usage]()** and **[infrastructure]()**, furthering its impact on accessibility and affordability.
    - **Wireless Data Costs:** The cost of wireless data dropped significantly to ₹8.31 per GB in 2024, reflecting a drastic decrease since 2014.
    - **Data Consumption:** By June 2024, average monthly data consumption per wireless subscriber reached 21.30 GB, a 353-fold increase.
    - **Mobile Base Stations:** As of November 2024, the number of mobile base stations stood at 29.4 lakh, representing robust infrastructure growth.
    - **Foreign Direct Investment (FDI):** The sector attracted **[FDI]()** worth 670 million USD in 2024-25, showcasing a sharp increase compared to previous years.
- **Rapid 5G Rollout**
  - India's telecom sector is on the path to achieving groundbreaking milestones with a focus on nationwide **[5G rollout]()** and saturation:

- **Fastest 5G Rollout:** The country has achieved one of the fastest 5G rollouts, covering a vast number of districts.
  - The rollout of 5G technology has **strengthened network connections**, enhancing overall efficiency.
- **Proactive Leadership:** The sector's proactive approach to infrastructure enhancement has been pivotal in driving this transformation.

Note:

- **Network Readiness Index (NRI) 2024:**
  - India has climbed 11 positions to rank 49th in the **Network Readiness Index (NRI) 2024**, up from 60th in 2023. This reflects a noteworthy advancement in its **digital infrastructure** and capabilities.
- **Global Cyber Security Index 2024:**
  - India has achieved a major milestone in **cybersecurity** by securing Tier 1 status in the 5th edition of the **Global Cybersecurity Index (GCI) 2024**, published by the **International Telecommunication Union (ITU)**.

What are the Various Telecom Reforms in India?

- **Telecommunication Act, 2023:**
  - The government introduced the **Telecommunication Act, 2023**, marking the beginning of a new era of efficient and modern telecom sector regulation. It **replaces outdated colonial-era laws** such as the **Telegraph Act of 1885** and the **India Wireless Telegraph Act of 1933**.
  - The **new act provides a simple framework** for authorisation, a clearly defined framework for spectrum assignment and its optimal utilisation, an effective and efficient **Right of Way (RoW) framework**, strong provisions for **national security** and **public emergency**, promotion of innovation and technology development through **Digital Bharat Nidhi**, **Regulatory Sandboxes**, etc.
  - The act also **provides for the protection of users** and for a two-tier Adjudication Mechanism along with voluntary undertakings.
- **RoW Portal;**
  - The **GatiShakti Sanchar portal** has been developed for submission of the RoW applications across all 36 States/UTs and major Central ministries.
  - Dashboard monitoring has **addressed bureaucratic hurdles** by ensuring transparent processes for applications and minimising paperwork and all this has **reduced the average disposal time of applications**.
  - The portal has **streamlined approvals in a time-bound manner** leading to a substantial increase in the approval of Towers and **Optical fiber cable** permissions (3.23 lakhs since inception).
- **Gati Shakti Sanchar Portal of National Master Plan:**
  - **Department of Telecommunication (DoT)** is using the **National Master Plan (NMP)** for planning of 4G Saturation project in uncovered villages and to find out habitations without adequate 4G coverage.
- **Reducing Compliance Burden:**
  - With an aim to achieve **Ease of Living** and **Ease of Doing Business**, launched an ambitious campaign to reduce compliance burden by simplifying **government-to-citizen** and **government-to-business** interfaces.
- **Pan-India Cell Broadcasting (CB):**
  - Enhancing public protection by providing **targeted early warning alerts** by facilitating the implementation of Pan-India cell Broadcasting (CB).
    - DoT in collaboration with several ministries, is overseeing the nationwide implementation of the CB system.
  - This system under implementation **currently covers nearly 80% of the network** and is crucial for disseminating alerts during emergencies.

- **Bharat 6G Vision and Bharat 6G Alliance (B6GA):**
  - PM launched the **Bharat 6G Vision** in March 2023, positioning India as a global leader in designing, developing, and deploying 6G technology in 2030.
  - B6GA is a **collaborative platform that brings together academia, industry and government** to build a comprehensive 6G ecosystem in India.
  - The alliance focuses on R&D and standardisation of 6G technology, with the goal of making **India a global leader** in the emerging 6G landscape.
- **Prime Minister Wi-Fi Access Network Interface (PM-WANI):**
  - **PM-WANI** was launched in 2020 by the **Department of Telecom (DoT),** the PM-WANI framework aims to expand public Wi-Fi hotspots across India, particularly in rural areas.
  - It allows local businesses, like shopkeepers, to set up Wi-Fi hotspots, providing affordable internet access and supporting the goals of the **National Digital Communications Policy, 2018.**

How Has the Indian Telecom Revolution Impacted the Nation?

- **Bridging the Gap Between Rich and Poor:** The telecom revolution has been instrumental in narrowing the **gap between different economic classes**.
  - Affordable services, widespread connectivity, and low-cost smartphones have made **digital resources** accessible to people from all segments of society.
- **The Vision of Digital India:** The **Digital India initiative** was introduced with a holistic and comprehensive approach, aiming to ensure that the benefits of digital transformation reach every corner of the country. **Unlike fragmented efforts**, this vision focuses on integrated strategies to achieve nationwide digital inclusion.
  - **Four Pillars of the Digital India Vision:** To realise the ambitious goals of the Digital India initiative, four key pillars were identified:
    - **Reducing Device Costs:** Making digital devices affordable so that people from all economic backgrounds can access technology.
    - **Ensuring Nationwide Connectivity:** Expanding infrastructure to connect even the most remote areas.
    - **Making Data Accessible to All:** Lowering data costs and ensuring reliable internet services to bridge the digital divide.
    - **Adopting a Digital-First Strategy:** Encouraging a mindset that prioritises digital solutions for governance, **education**, and commerce.
- **Rise of Digital Payments:** The surge in **digital payments** has become a key driver for telecom growth.
  - **Unified Payments Interface (UPI)** transactions have grown from 92 crore in FY 2017-18 to 8,375 crore in FY 2022-23.
- **Remote Work and Education:** The **Covid-19** pandemic accelerated the adoption of remote work and online education, becoming an unexpected growth driver for the telecom sector.

What are the Challenges Related to the Telecom Sector?

- **Infrastructure Gaps:** Despite significant progress, India's telecom infrastructure still faces a **substantial urban-rural divide**.
  - The challenges in rural areas include difficult terrain, lack of consistent power supply, and lower return on investment.
- **Spectrum Pricing:** High spectrum prices have been a significant hurdle for Indian telecom operators.
  - This issue **not only affects the financial health of telecom companies but also potentially slows down the adoption of new technologies** like 5G, impacting India's digital transformation journey.
- **Quality of Service:** Despite improvements, quality of service remains a persistent issue in India's telecom sector.
  - Poor service quality leads to customer dissatisfaction and churn, impacting operator revenues.
- **Regulatory Challenges:** The telecom sector in India grapples with a complex and sometimes unpredictable regulatory environment.
  - Issues like frequent policy changes, and **multiple levies** (license fees, spectrum usage

charges, etc.) create operational uncertainties.

Way Forward

- **Bridging Infrastructure Gaps:**
  - Focused investments in rural infrastructure to reduce the urban-rural divide, with incentives for telecom companies to deploy networks in underserved areas.
  - Adoption of **innovative technologies like satellite-based communication** and **renewable energy** solutions to address issues of difficult terrain and inconsistent power supply.
  - **Collaboration between the government and private players** to create a robust and inclusive telecom ecosystem.
- **Rationalising Spectrum Pricing:**
  - Implementing a fair and transparent spectrum pricing mechanism to ease financial pressure on telecom operators.
  - **Offering flexible payment terms** and discounts for spectrum acquisition, especially for emerging technologies like 5G.
  - Encouraging spectrum sharing and trading to optimize its utilization and reduce costs.
- **Improving Quality of Service:**
  - Introducing stringent quality benchmarks and monitoring mechanisms to ensure compliance by operators.
  - Promoting **customer-centric policies** and resolving complaints efficiently to enhance user satisfaction.
- **Streamlining Regulatory Framework:**
  - Introducing stable and predictable policy frameworks to encourage long-term investments.
  - Enhancing **collaboration between stakeholders** through consultations to align policies with industry needs and global standards.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. Which of the following is/are the aims/aims of the "Digital India" Plan of the Government of India? (2018)

1. Formation of India's own Internet companies like China did.
2. Establish a policy framework to encourage overseas multinational corporations that collect Big Data to build their large data centers within our national geographical boundaries.
3. Connect many of our villages to the Internet and bring Wi-Fi to many of our schools, public places and major tourist centers.

Select the correct answer using the code given below:

(a) 1 and 2 only

(b) 3 only

(c) 2 and 3 only

(d) 1, 2 and 3

Ans: (b)

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