

## Sansad TV Perspective: The 5G Era

In the series Sansad TV Perspective, we bring you an analysis of the discussion featured on the insightful programme 'Perspective' on Sansad TV, on various important topics affecting India and also the world. This analysis will help you immensely for the [IAS exam](#), especially the mains exam, where a well-rounded understanding of topics is a prerequisite for writing answers that fetch good marks.

In this article, we feature the discussion on the topic: The 5G Era

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**Guests:**

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**Context:** Prime Minister Narendra Modi recently inaugurated 5G services in India marking the beginning of the use of the next-generation network in the country.

**Highlights of the discussion:**

1. Journey from 1G to 5G.
2. Impact of 5G communications on common people and enterprises.
3. Comparative analysis of 5G implementation in India vs other countries.
4. Using 5G to develop India as a solution provider in innovation markets

**Introduction:**

- The 5G services will be rolled out in a phased manner.
- The 13 cities where 5G networks will be launched first include Ahmedabad, Bengaluru, Chandigarh, Chennai, Delhi, Gandhinagar, Gurugram, Hyderabad, Jamnagar, Kolkata, Lucknow, Mumbai and Pune.
- 5G technology will offer a wide range of benefits such as seamless coverage, high data rate, low latency, and highly reliable communications.
- It will also help in real-time monitoring of disasters, precision agriculture, minimizing the role of humans in dangerous industrial operations and delivery of critical services.

Get details on [5G](#) at this link.

### Journey from 1G to 5G:

- Launched in the late 1970s in Japan, 1G was the first generation of mobile telecommunication technology that offered voice calls only. But it came with low sound quality, low coverage, and without any roaming support.
  - 1G technology involved analogue signalling.
- The major leap for telecom tech of that time came in 1991 with the introduction of 2G. The analogue signals of 1G became completely digital in the second generation.
  - Apart from introducing the CDMA and the GSM concepts, it allowed users to roam and offered small data services like SMS and MMS at a maximum speed of around 50 kbps. While the focus was still on voice calling, data support was introduced.
- The 3G network was introduced in 1998. 3G technology witnessed changes from voice to data transmission. This is the generation that brought emails, navigational maps, video calling, web browsing and music to mobile phones.
- The speed of 3G quickly became insufficient as technology & smartphones evolved resulting in heavier files and bulkier data flows. 4G let users stream and download videos at speeds three times greater than 3G ranging from around 20Mbps to up to 50Mbps.
  - High speed, high quality, high capacity voice and data services were provided by 4G.
  - Compared to 3G, a phone on a 4G network got a quicker response to its requests (lower latency).

### Impact of 5G:

- The positive impact of the [Fourth Industrial Revolution](#) and its related emerging technologies will be fully realized through the wide-scale deployment of 5G communication networks in combination with other connectivity solutions.
- The key functional drivers of 5G will unlock a broad range of opportunities, including the optimization of service delivery, decision-making, and end-user experience. This will result in \$13.2 trillion in global economic value by 2035, generating 22.3 million jobs in the 5G global value chain alone.
- **In Industries:**
  - 5G will contribute to industrial advances by enabling faster and more effective inspections through predictive intelligence, improving workplace and worker safety and by enhancing operational effectiveness.
  - 5G also has the potential to impact the industry by managing the carbon footprint and bridging the [digital divide](#).

### In Health Sector:

- 5G in the health sector can be applied in Remote patient monitoring, Internet of medical skills/remote surgery, Image transfer, Augmented reality/Virtual Reality enabled healthcare, Disease management, Wearables and ingestibles and Drone-enabled medical service delivery.

**In Financial Services:**

- 5G enhances mobile banking, wearables for payment, Internet of moving things, digital deposits, payments and peer-to-peer lending, etc.

**In Energy Sector:**

- Smart grid to enhance reliability and availability
- Drone monitoring capabilities to minimize potential losses.
- Smart energy management.
- Hazard and maintenance sensing.
- Smart street lighting.

**In Education Sector:**

- The education industry is one of the fastest-growing domains of IoT ([Internet of Things](#)) applications, with great potential to improve today's teaching, learning and campus operations.
- Smart classrooms will provide better learning tools and have better results, making the education system more effective and valuable.
- Educators can use virtual reality (VR) to allow students to have a more engaging and immersive experience.

**In Agriculture:**

- 5G encourages network-controlled technology to replace manually performed tasks like sowing, watering and reaping crops.
- It also helps in implementing precision agriculture technologies for better resource management.
- Blockchain technologies could also be deployed in agriculture, ensuring more robust and secure supply chains.

**5G implementation in India Vs other countries:**

- As of June 2022, 70 countries across the globe had 5G services live while another 15 had mobile 5G networks partially built, compared to the 38 countries with 5G services in mid-2020.
- Deployment was slowed down due to two years of the COVID-19 pandemic.
- Various estimates show that the number of 5G users will be one billion by the end of 2022.
- 4G services took four years to reach the same number of users while 3G services had taken 12 years to reach one billion users. 5G services are expected to have a 25 percent market share by 2025.

- South Korea is the country which deployed the first 5G network.
- In terms of the number of cities with 5G services, China leads with 356 cities while the US is second with 296 cities. The US is followed by countries like the Philippines, South Korea and Canada.
- The uptake of 5G services is expected to be equally rapid in India as well.
  - Telecom hardware company Ericsson had stated that it estimated that 40 percent of subscribers in India will be on 5G networks by 2027, according to a report released in June 2021.

**Using 5G technology for developing ‘Make in India’ use cases for the Indian and global markets:**

- India's position as a global economic and technological powerhouse will be strengthened and advanced by 5G technology, which will also present new chances for start-ups to develop creative solutions to problems already in existence, generate employment, and support India's resilient economy.
- This brings harmony with the Prime Minister's vision to promote ‘Atma Nirbhar Bharat’, Jai Anusandhan and ‘Sabka Saath, Sabka Vishwas’.
- Bharti Airtel and Tech Mahindra are co-developing and marketing 5G use cases in India besides setting up a joint 5G innovation lab for developing ‘Make in India’ use cases for the Indian and global markets.
- Various companies are working to develop and market innovative enterprise-grade digital solutions across 5G, cloud, and content delivery networks, and to market customized enterprise-grade private networks, which will be at the core of the digital economy.

**Conclusion:** For 5G to become a reality and for its benefits to reach many, governments and regulators across markets in India must come together to remove regulatory and policy barriers and modernize the network infrastructure and look at it as national infrastructure. Governments should collaborate with 5G network providers to encourage infrastructure investment and achieve larger, long-term objectives. In this way, it has the potential to be the basis on which digital visions of the country are realized.