



Perspective: 5G Rollout: Telcos VS Big Tech Cos

For Prelims: 5G Technology.

For Mains: IT and Computers, Challenges for 5G Rollout in India.

Why in News?

Recently, the Union Cabinet gave its **approval for the auction of the spectrum** that can be used to offer 5G services. A total of 72,097.85 MHz (or 72 Ghz) of spectrum with a validity period of 20 years will be put on sale during the auction planned towards the end of July 2022.

- The government has also allowed big tech firms to set up captive 5G networks. However, the **telcos (telecoms) have opposed any move to set aside spectrum for captive private networks** at an administered price.

What is 5G Technology?

▪ About:

- 5G is the **5th generation mobile network**. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks.
- It enables a new kind of network that is **designed to connect virtually everyone** and everything together including machines, objects, and devices.
- Internet speeds in the **high-band spectrum** of 5G has been tested to be as high as 20 Gbps (gigabits per second), while, in most cases, the **maximum internet data speed in 4G has been recorded at 1 Gbps**.
- In India, **Satcom Industry Association-India (SIA)** has voiced concerns over the Government's plan to include the **Millimetre Wave (mm Wave) bands** in the 5G spectrum auction.

▪ Bands in 5G:

- 5G **mainly work in 3 bands**, namely low, mid and high-frequency spectrum — all of which have their own uses as well as limitations.
 - **Low band spectrum:** It has shown great promise in terms of coverage and speed of internet and data exchange however the maximum speed is **limited to 100 Mbps** (Megabits per second).
 - **Mid-band spectrum:** It offers higher speeds compared to the low band but has limitations in terms of coverage area and penetration of signals.
 - **High-band spectrum:** It has the highest speed of all the three bands but has extremely limited coverage and signal penetration strength.

What will be the Significance of 5G Rollout?

- **Useful Across Three Main Connected Services:** Broadly speaking, 5G is used across **three main types of connected services**, including enhanced mobile broadband, mission-critical

communications, and the massive IoT.

- **Enhanced Mobile Broadband:** In addition to making our smartphones better, 5G mobile technology can usher in new immersive experiences such as [Virtual reality \(VR\) and Augmented Reality \(AR\)](#) with faster, more uniform data rates, lower latency, and lower cost-per-bit.
- **Mission-Critical Communications:** 5G can enable new services that can transform industries with ultra-reliable, available, low-latency links like remote control of critical infrastructure, vehicles, and medical procedures.
- **Massive Internet of Things:** 5G is meant to seamlessly connect a massive number of embedded sensors in virtually everything through the ability to scale down data rates, power, and mobility providing extremely lean and low-cost connectivity solutions.
- **Fourth Industrial Revolution:** Combined with the [Internet of Things \(IoT\)](#), cloud, [big data](#), [Artificial Intelligence](#), and [edge computing](#), 5G could be a critical enabler of the [fourth industrial revolution](#).
- **Smooth Governance:** 5G technology would also bring positive changes in the governance of the country, ease of living and ease of doing business.
 - This will also **increase convenience and create many employment opportunities**.

What will be the Challenges Regarding 5G Rollout?

- **Low Fiberization Footprint:** There is a need to upgrade fiber connectivity across India, which at present connects only 30% of India's telecom towers.
 - For an efficient 5G India launch and adoption, this number has to double.
- **'Make in India' Hardware Challenge:** The ban on certain foreign telecom OEMs (Original Equipment Manufacturers) upon which most of the 5G technology development depends, presents a hurdle in itself.
- **High Spectrum Pricing:** India's 5G [spectrum](#) pricing is several times costlier than the global average.
 - This will be of detriment to India's cash-strapped telcos.
- **Choosing the Optimal 5G Technology Standard:** The tussle between the homegrown [5Gi](#) standard and the global **3rd Generation Partnership Project (3GPP)** standard needs to be concluded in order to hasten 5G technology implementation.
 - While 5Gi brings obvious benefits, it also increases 5G India launch costs and interoperability issues for telcos.
 - 3GPP is a **collaborative Project Agreement between telecommunications industry partners** (Organizational Partners). Its members meet regularly to collaborate and create cellular communications standards.
- **Enabling Critical Infrastructure:** 5G will require a fundamental change to the core architecture of the communication system. The major flaw of data transfer using 5G is that it can't carry data over long distances. Hence, even 5G technology needs to be augmented to enable infrastructure.
- **Financial Liability on Consumers:** For the transition from 4G to 5G technology, one has to upgrade to the latest cellular technology, thereby creating financial liability on consumers.
- **Capital Inadequacy:** Lack of flow of cash and adequate capital with the suitable telecom companies (like Bharti Airtel and Vodafone Idea) is delaying the 5G spectrum allocation.

Why is 5G spectrum a Setback for Telcos?

- **Main Concerns:** The main concerns centered around the methodology of allotting spectrum to non-telcos, the price at which this spectrum will be made available and the bands of the spectrum which will be given out.
- **Impact on Revenues:** Cellular Operators Association of India (COAI) has made its position clear, allowing independent entities to set up private captive networks with **direct 5G spectrum allotment would 'severely' impact revenues** and degrade 5G's business case for telecom operators.
- **Increased Competition:** Since telcos after buying **expensive 5G airwaves** in an auction might not be in a position to match tech companies (private networks/enterprises) on price on enterprise networks deals as the latter is set to gain the coveted airwaves at a nominal fee from the government.
- **Limited Applications:** The telcos also emphasised that the allotted spectrum should be used for

Machine-to-Machine (M2M) applications only, and not to set up private networks in areas that may be deemed public, for example, large residential townships set up by companies for their employees.

- **Challenges with Infrastructure:** The telcos also questioned regarding the electromagnetic frequency regulations since tower density in the country will increase on account of the 5G roll-out, and **there may be challenges to setting up new towers.**

What can be the Way Forward?

- **Pricing Rationalisation:** Rationalisation of this spectrum pricing is needed so that the government generates adequate revenue from the auction without hampering implementation plans for 5G in India.
- **Government's Contribution:** The government has complete control over the inputs. One of the key inputs of 5G is the band spectrum.
 - By managing the design of the spectrums, the government **can control the price to be paid by the people.**
 - The government shall **support the telecom companies** to roll out networks that are sustainable and affordable for the public.
- **Bridging the Rural-Urban Gap:** 5G can be deployed at different band spectrums and at the low band spectrum, the range is much longer which is helpful for the rural areas.
- **Enabling the Manufacturing Sector in India:** As 5G starts taking shape in India, it is important to strengthen its domestic telecommunication manufacturing market so that not just users but also manufacturers and providers of these technologies can have a big impact on a global scale.
- **Need for Collaboration:** Telcos must improve at working with enterprise customers to explore new issues and collaborate on solutions to leverage 5G capability.
 - The 5G spectrum **auctions are likely to see a muted response from the telcos due to their unmet concerns over pricing.** This could be a reason for the slowing down of the 5G rollout, or at least, lead to an uneven spread of 5G services.

Conclusion

Broadband, especially mobile broadband, has become an integral part of the daily lives of citizens. The rapid expansion of 4G services across the country in the last few years gave a boost to digital connectivity. And now it's time for 5G which has the potential to work as a catalyst in achieving more immense overall economic growth of the country. However, the tussle over private captive networks will only add to the list of rollout roadblocks that need to be removed to accomplish all the significance of this innovation.