



India's First 5G Testbed

For Prelims: 5G, start-ups, Communication technology (4G, 5G)

For Mains: Uses of 5G, Challenges for 5G Rollout in India

Why in News?

Recently, Prime Minister **inaugurated the country's first 5G testbed** that will enable [start-ups](#) and industry players to test their products locally, thereby reducing dependence on facilities abroad.

What is the Significance of this Step?

- It was an important step towards self-reliance in the direction of critical and modern technologies in the [telecom sector](#).
 - The **5G testbed** had been set up at a **cost of about Rs. 220 crore**.
 - In the **absence of a 5G testbed, startups** and other industry players were **required to go abroad to test and validate their products** for installation in a 5G network.
- India's own **5G standard had been made in the form of 5Gi** which would **play a big role in bringing 5G technology** to the villages of the country.
 - **5Gi** is basically a Made in India 5G standard created through a collaboration between IIT Hyderabad and Madras (Chennai).

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.
- **Significance:**
 - 5G technology would also **bring positive changes in the governance of the country, ease of living and [ease of doing business](#)**.
 - This would **boost growth in every sector** like agriculture, health, education, infrastructure and logistics.
 - This will also **increase convenience and create many employment opportunities**.

What are the Challenges for 5G Rollout in India?

- **Low Fiberization Footprint:** There is a **need to upgrade fibre 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 manufacturer)** 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 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)** for formalizing global mobile 3G wireless systems based on radio access technologies and Global System for Mobile Communications (GSM) specifications.

Way Forward

- The country **needs to encourage and boost its local 5G hardware manufacturing** at an unprecedented rate if it needs to realise the 5G India dream.
- **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.
- **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.

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