

**GOVERNMENT OF INDIA  
MINISTRY OF COMMUNICATIONS  
DEPARTMENT OF TELECOMMUNICATIONS**

**RAJYA SABHA  
UNSTARRED QUESTION NO. 1496  
TO BE ANSWERED ON 15<sup>TH</sup> DECEMBER, 2023**

**5G TECHNOLOGY AND INFRASTRUCTURE**

**1496 # DR. LAXMIKANT BAJPAYEE:**

Will the Minister of Communications be pleased to state:

- (a) the details of advancements made in the development of indigenous 5G technology and infrastructure; and
- (b) the collaborative efforts undertaken by Government, industry, and research institutions in the development and deployment of the Indigenous 5G Test Bed?

**ANSWER**

**MINISTER OF STATE FOR COMMUNICATIONS  
(SHRI DEVUSINH CHAUHAN)**

(a) & (b) The Government is committed to promoting development and manufacturing of telecom technology and products in India, the details of which are as under:

**1. Indigenous 4G/5G technology**

- In the last few years India has made a huge leap forward towards developing its own telecom stack and in strengthening its solutions especially in the areas of 4G and 5G technologies for the domestic and global market requirements.
- Indigenous 4G/5G telecom stack have been developed and being deployed in Bharat Sanchar Nigam Limited (BSNL) Network.
- The Government is actively fostering partnerships with Indian industry, academia, and startups to spearhead the development of 5G technology within the country. Centre for Development of Telematics (C-DoT), an autonomous R&D Centre of DoT, has made progress on the development of Open Radio Access Network (ORAN) compliant 5G equipment, called "BharatRAN". This collaborative effort culminated in the successful development of a prototype 5G Standalone (SA) RAN.
- The Indigenous 5G Test Bed developed through a collaborative effort of eight pioneering institutes of the country and entirely funded by the Government is fully programmable and can be leveraged for Next Phase of Research in 5G Advanced and 6G.
- Indigenously developed 5G systems at IIT Madras have been deployed for testing for 5G Use cases at Military College of Telecommunication Engineering (MCTE), Dr. Ambedkar Nagar. Additionally, a deployment is underway at Indian Railway Institute of Signal Engineering and Telecommunications (IRISET) for the Railways.

## **2. Indigenous 5G Test Bed**

- Government approved a financial grant of Rs. 224 Crore in March 2018 to establish an 'Indigenous 5G Test Bed' in India, recognizing India's specific requirements and aiming to take the lead in 5G deployment.
- The project involved eight collaborating institutes working together on this initiative, including Indian Institute of Technology Madras, Indian Institute of Technology Delhi, Indian Institute of Technology Hyderabad, Indian Institute of Technology Bombay, Indian Institute of Technology Kanpur, Indian Institute of Science Bengaluru, Society for Applied Microwave Electronics Engineering & Research (SAMEER), and Centre of Excellence in Wireless Technology (CEWiT), Chennai.
- The Indigenous 5G test bed was dedicated to the nation by Hon'ble PM on 17<sup>th</sup> May 2022.
- The Test Bed is available at five different locations across India and is compliant with the global 3GPP standard and the ORAN standard.
- It provides an end-to-end testing facility, enabling R&D teams in Indian academia and industry to validate their products, prototypes, algorithms, and demonstrate various services.

## **3. Digital Communications Innovation Square (DCIS) Scheme**

- For development of indigenous 5G technology and other emerging technologies in communications service sector, DoT is implementing "Digital Communications Innovation Square (DCIS)" Scheme. The scheme is geared towards translation of research into technology (product/process).
- Government has supported more than 96 start-ups/MSMEs till date with Rs. 74.7 Crore as grant-in-aid under this Scheme.

## **4. Telecom Technology Development Fund (TTDF) Scheme**

- Efforts have been undertaken to ensure a cohesive ecosystem for start-ups and MSMEs. Towards this end, the Government has launched the Telecom Technology Development Fund (TTDF) Scheme in October 2022, with an annual fund allocation of Rs 500 Crore to fund R&D in rural-specific communication technology applications and form synergies with the industry to develop the telecom ecosystem in India.
- The details of the major projects sanctioned under TTDF are as under:
  - i. 6G: Tera Hertz (THz) Test bed with Orbital Angular Momentum and Multiplexing.
  - ii. Advance Optical Communications Test Bed.
  - iii. Development of a 100 Gbps hardware based encrypted communication system hub.
  - iv. Gigabit Speed Customer Premise Equipment Radio for Private Networks, Homes and Commercial Buildings.
  - v. Development of NavIC based Indian Standard Time (IST) traceable Primary Reference Time Clock (PRTC) for telecom sector.

## **5. 5G in India**

- In a short period of 14 months after the launch of 5G services on 01-10-2022, 5G has been rolled out in 738 districts across the country and a total of 3,97,923 5G base stations have been installed.

- Approximately 100 million mobile subscribers have started using 5G services in the country. With these numbers, India is now amongst the leading 5G ecosystems in the world.
- A significant amount of telecom equipment deployed in the 5G rollout is "Made in India".

## 6. India Mobile Congress 2023

- The 7th Edition of India Mobile Congress (IMC) 2023, was held at Bharat Mandapam, Pragati Maidan from 27-29 Oct'2023.
- IMC is Asia's largest telecom, media and technology forum and witnessed leading companies and start-ups displaying their latest solutions and innovations in the telecom and technology sectors.
- IMC hosted over 1.50 lakh visitors, 1300 plus CXO-level delegates, 400 plus speakers, 230 plus exhibitors and 400 startups and witnessed participation from over across 67 countries this year.
- The event showcased futuristic technologies including industrial and societal applications enabled by 5G and 6G network technology and India's digital and telecommunication prowess.
- A number of exhibitors displayed their innovative technologies & ideas, while discussions focused on paving the path to a sustainable future.

## 7. Production Linked Incentive (PLI) in Telecom Sector

Production Linked Incentive (PLI) Scheme for Telecom and Networking Products was launched in June, 2021. Within a short span, it has catalyzed production of telecom equipment in India. The details are as follows:

- Total of 33 telecom and networking products.
- Incentives ranging from 4 to 7%
- Additional 1% incentive for MSMEs for first 3 years.
- Additional 1% incentive for products 'designed in India'.
- Total 42 applicant companies including 28 MSMEs.
- Total financial outlay: Rs. 12,195 Crore.

Achievements of PLI in telecom sector till date:

	Total commitment by applicants	Progress till 31 <sup>st</sup> October, 2023
Cumulative investment	Rs. 4,014 Crore	Rs. 2,725 Crore
Incremental sales	Rs. 2,37,807 Crore	Rs. 38,999 Crore
Additional employment	44,494	15,561

- Under telecom PLI scheme, products worth Rs. 8,804 Crore have been exported till date.

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