



BHARAT 6G VISION – SCIENCE & TECHNOLOGY

NEWS: *The Bharat 6G Vision envisaged India to be a frontline contributor in design, development and deployment of 6G technology by 2030.*

WHAT'S IN THE NEWS?

6G is a next-generation telecommunications technology conceptualized as a major upgrade over 5G. It aims to revolutionize digital interactions with unprecedented speed and efficiency.

Unprecedented Speed and Latency

6G promises internet speeds of up to **1 terabit per second**, which is **100 times faster** than 5G. It offers **ultra-low latency**, enabling near-instantaneous communication and data processing. By comparison, 5G networks peak at speeds of **10 gigabits per second**.

Designation by the International Telecommunication Union (ITU)

The International Telecommunication Union has designated 6G as '**IMT 2030**', indicating its anticipated deployment timeline. This naming underscores its role in shaping future global connectivity standards.

Frequency Bands Under Study

The ITU is studying several frequency bands for 6G's optimal performance:

4400-4800 MHz

7125-8400 MHz (or parts thereof)

14.8-15.35 GHz

These bands are being evaluated for their suitability in supporting International Mobile Telecommunications (IMT) systems.

Bharat 6G Vision

The government plans to implement the 6G project in two phases;

Phase 1 from 2023-2025 (2 years): In Phase 1, support will be provided to explorative ideas, risky pathways, and proof-of-concept tests.

Phase 2 from 2025-2030 (5 years): In Phase 2 there is conceptualization and commercialization of technology solutions.

Use cases of 6G include remote-controlled factories, constantly communicating self-driven cars and smart wearables taking inputs directly from human senses.

Benefits of 6G Vision



The technology 6G will enable advancements in sectors like;

Healthcare: Telemedicine, robotic surgeries, AI-based diagnostics.

Agriculture: Smart monitoring, precision farming using IoT sensors.

Education: Real-time immersive learning through AR/VR technologies.

Industrial Automation: Leveraging Industry 4.0 with enhanced Machine-to-Machine communication, Digital Twins, and IoT for smart industries.



Challenges

There is a **need for R&D investments** with a focus on semiconductors, AI processors, and advanced SoCs.

There are concerns related to **cybersecurity and privacy** in a hyper-connected network environment.

Recommendations to enable Bharat 6G Mission

Participation to global standards forums to ensure interoperability and global reach of our innovation, **Space-Terrestrial Integration** for ubiquitous coverage,

Innovative funding mechanisms to support industry, startups, academia, and national laboratories to undertake R&D,

Shared use of spectrum, particularly in the higher frequency bands.

Concluding remarks

Bharat 6G Mission is fully aligned with the national Vision of **Atmanirbhar Bharat**.

It also ensures that India takes its rightful place in the world as a **leading supplier of advanced telecom technologies** and solutions that are affordable and contribute to the global good.