



Roadmap to 6G An India Perspective on 6G

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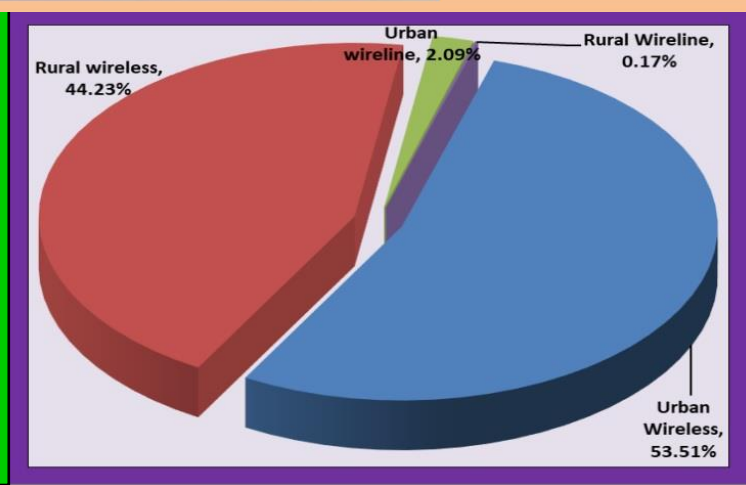
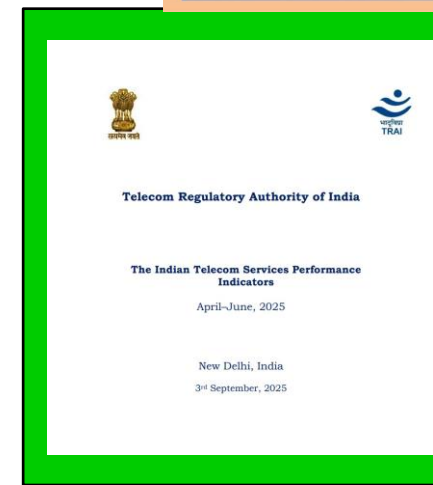
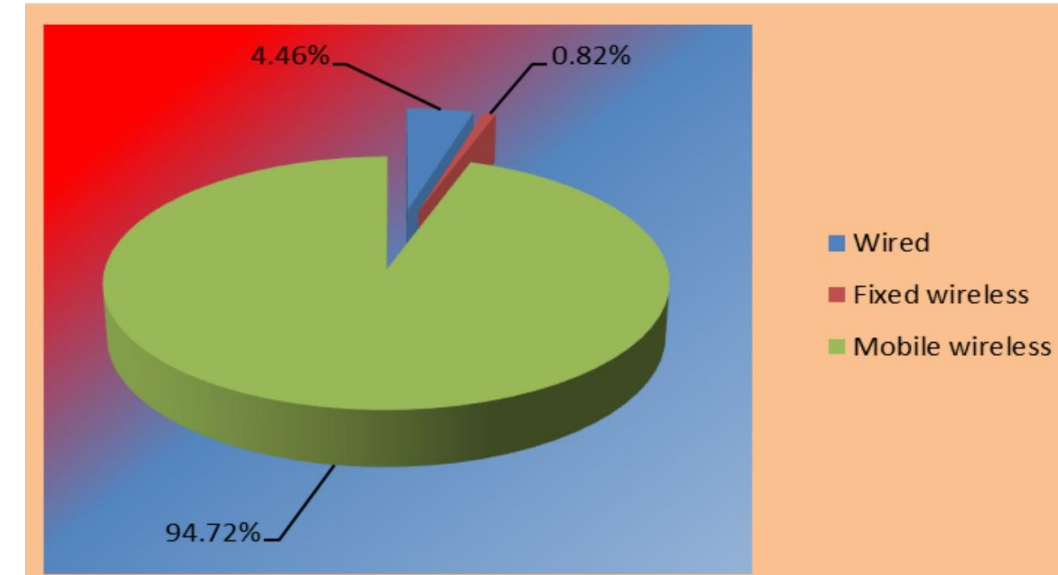


- 5G Market rollout
- Roadmap to 6G – Role of Bharat 6G Alliance (B6GA)
- Spectrum for 5G Adv and 6G
- 6G Roadmap Strategy
- Building the 6G ecosystem
- International Partnerships of B6GA



India Market

- TRAI Quarterly report September 2025
- India is Mobile First Country - > 98% people using mobile to access Internet
- India – fastest rollout of 5G globally
 - Crossed 500,000 5G Basestations deployed
- Fixed Wireless Access – monetization of 5G
 - 7.85M 5G FWA subscribers
- India Data Traffic to exceed 1068 Exabyte / Year (by 2030)
- # Subscriptions 1.16B
- Teledensity ~ 83 (Urban 125, Rural 59)
- ~ 98 % of telephone subscribers using wireless
- # Internet subscriptions (> 1B), Wireless (958M)
- Wireless data: > 24 GB per subscriber per month
- Broadband Internet subscribers 979M



Bharat 6G Vision ...

- India 6G roadmap - March 22, 2023
 - By Hon. Prime Minister of India
- Design, develop and deploy 6G Network Technologies
- Affordability, Sustainability, and Ubiquitous Coverage
- Position India as a global leader in 6G
 - Contribution to global standardization

<https://dot.gov.in/circulars/bharat-6g-vision-statement>



Bharat 6G Alliance (B6GA)



- Formed in July 3, 2023
- India to become ...
 - A global supplier of IP, products and solutions in 6G
 - Affordable 5G and 6G
- Deploy 6G technologies by 2030
- Support and energize Indian participation in SDOs

Founding members (16)

- 3 Operators, 2 Academia, 3 Government R&D Labs, 8 Tech companies

■ Seven Working Groups

■ Membership

- Corporate, Affiliate, Associate, Expert Members, and Guest Members
- MoU with International partners – 6G Flagship (**Finland**), 5G ACIA (**Europe**), **6G SNS-IA (Europe)**, Next G Alliance (**USA**), XGMF (**Japan**), 6G **Korea**, ...

■ Seven Working Groups

1. Spectrum
2. Device technology, sensors and manufacturing ecosystem
3. Technology
4. Applications
5. Green and sustainability
6. Outreach
7. 6G use-cases and revenue stream



Theme

Accelerating India's 6G Leadership

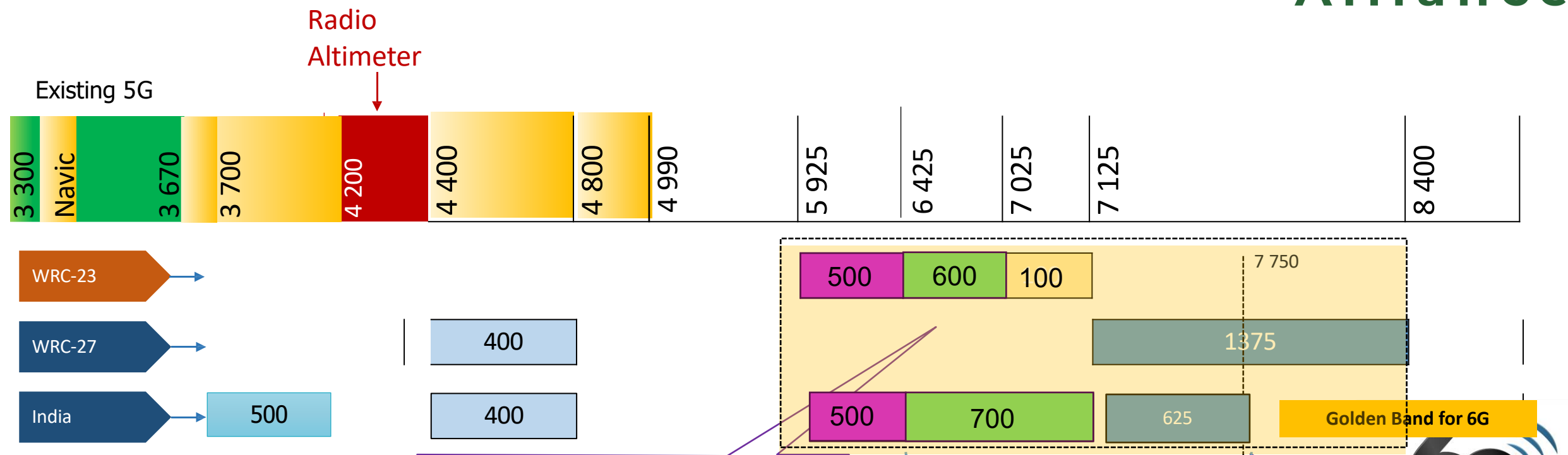


Accelerating India's 6G Leadership

Version 1.0



India Spectrum Situation



- 6 GHz Band
 - $(300 + 300 + 100) = 700$ MHz identified for IMT services
 - 400 MHz spectrum available currently
 - 500 MHz Spectrum for unlicensed operation
 - India aligned with Europe, UK, Australia, Japan, ...
- 600 MHz band to complement 6G for coverage

6 GHz for 5G Adv rollout

Band for 5G Adv and 6G

Limited to 7750 MHz in India



India's Phased Approach towards 6G

■ Phase 1 (2025–2027):

- R&D, Standardization (contributions to ITU and 3GPP)
- Technology Testbeds
- Pre-Standardization Prototypes
- Spectrum trials

■ Phase 2 (2027–2030):

- Continued R&D
- Standard-based prototypes
- Pilot trials.

■ 2030 and Beyond:

- Medium-to-large scale PoC trials of standard-based prototypes
- Commercial readiness

■ Current Focus on Phase 1



Key Technology Focus Areas

■ Hub + Spoke Model

■ One Anchor Institution / Hub + Multiple Spoke Institutions for each Focus Area

Topics aligned with 6G (in coordination with TSDSI)

- AI/ML
- Non-Terrestrial Networks (NTN)
- Fixed Wireless Access
- Integrated Sensing and Communications (ISAC)
- IoT
- Security
- MIMO
- Fixed Wireless Access
- V2X
- ORAN
- Core Network
- Positioning

■ Multiple Hubs for important topics

■ ITU and 3GPP

- 2025-2027 – Key standardization activities
- IMT 2030 – TPR, Evaluation Methodology
- 3GPP Rel. 20, Study Items for Rel. 21

■ An important window of opportunity for India



International Bharat 6G Symposium 2025

■ International MoU Partners

- NextG Alliance, USA
- 6G SNS IA Europe
- 6G Flagship Project, Finland
- Next Generation Mobile Networks (NGMN)
- 6G Forum Korea
- 5G ACIA Europe
- UK India Future Networks Initiative (UKI-FNI)
 - ❖ UK Telecom Innovation Network (UKTIN)
- 6G Brasil
- XGMF, Japan

■ “Joint Statement Endorsing Principles for 6G: Secure, Open, Resilient, Inclusive, and Sustainable by Design”

■ Joint “Delhi Declaration” @ IMC 2025 ,

■ Exploring Workshops, Joint White papers

- Use Cases, Applications,
- Key Technologies, 6G spectrum



NOKIA



B6GA Whitepapers

- Released by Hon. Minister of Communications
- During IMC 2025

Powering the Next-Gen Telecom

Towards energy efficiency in 6G Macro and Small cell deployments

OCTOBER 2025
VERSION 2.0

6G Data Architecture, Security and Exposure Framework for RF Sensing

OCTOBER 2025
VERSION 1.0

Spectrum Roadmap for 6G in India

OCTOBER 2025
VERSION 2.0

AI and Network Evolution to 5G Advanced and 6G

Native AI, Infrastructure Implications, and Global-India Perspectives

OCTOBER 2025
VERSION 1.0

Summary

- India ramping up 6G-related activities
- Investing to build the 6G ecosystem – R&D, Components, Products
- Globally aligned spectrum strategy
- Importance of international cooperation and partnerships
 - India (B6GA) - active bilateral collaborations
 - Spectrum, Technology, Use cases, Sustainability
- India priorities - **Affordability, Sustainability, and Ubiquitous Coverage**
- An exciting time ahead ...

Thank You ...

