

# Future Spectrum studies for WRC-2027

Based on outcomes of WRC-23

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# WRC-23 Identification of new frequency bands for IMT

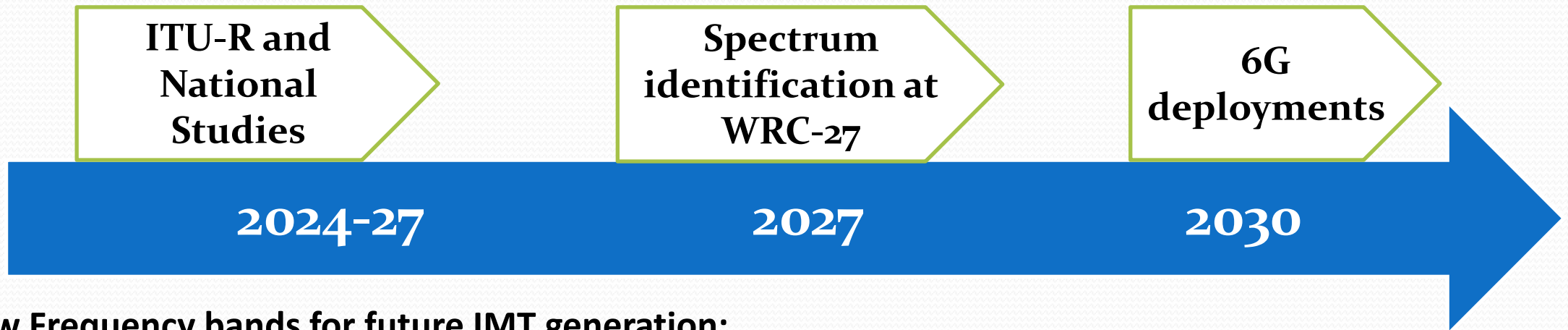
- WRC-23 identified new frequency bands for International Mobile Telecommunications (IMT), which will be crucial for expanding broadband connectivity and mobile services in various countries and regions. (IMT is the ITU word for 4G, 5G

and,

3 300-3 400 MHz	4 800-4 990 MHz (with power limits)
3 600-3 800 MHz	6 425-7 025 MHz (in Region 1)
7 025-7 125 MHz (for Regions 1 and 3 and two countries in R 2)	

- The WRC also recognised the use of 6425 to 7125 MHz for wireless access and RLANS in the Radio Regulation table of frequency allocations for the first time.
- Urgent studies are needed for opening of these bands in India.

# Studies for 6G spectrum



## New Frequency bands for future IMT generation:

- To consider the studies on sharing and compatibility studies and development of technical conditions for the use of the terrestrial component of IMT while protecting the existing services
- Three frequency bands are identified for studies towards IMT identification under WRC-27 Agenda item 1.7:
  - 4 400-4 800 MHz,
  - 7 125-8 400 MHz (or parts thereof), and
  - 14.8-15.35 GHz
- ITU-R WP 5D has started work on this agenda item.
- Some of these bands have extensive usage in India.

# Studies for 6G spectrum (Contd....)

- WRC-23 identified the upper 6 GHz (6 425 -7 025) for IMT in Region 1 and few countries in Region 2 and Region 3. Other countries have option to join the footnote at WRC-27.
- Band 7 025 – 7 125 MHz is identified for Region 1 & 3 and some countries in Region 2.
- Some countries have de-licensed the lower 6 GHz band ( 5925 – 6425 MHz) for wifi-6e.
- In India, 6 GHz band is currently used for satellite based services and Microwave backhaul.
- The requirements for existing services needs to be taken care of before introduction of a new service/application. This may require studies.

# Studies for NGSO satellites for WRC-27

**WRC-23 decided on a number of studies for NGSO satellites to support direct connectivity with Satellites**

## **Direct-to-Device Services:**

- The potential inclusion of direct-to-device services as a future WRC-27 agenda item highlights the interest in supplemental coverage from space, aligning with the satellite study group.
- WRC-23 approved new studies for satellites to have direct connectivity with mobile phones in UHF bands between 700 MHz and 2700 MHz. These studies will lead to use of NGSO satellites to connect directly with ground based mobile terminals using IMT technology
- WRC-27 Agenda Item 1.13 is critical for Non-Terrestrial IMT services

## **Smaller Antenna Sizes for satellites in Ku Band**

- **WRC-27 Agenda Item 1.2:** Studies on possible revisions of sharing conditions in the frequency band 13.75-14 GHz to allow the use of uplink fixed-satellite

# Studies for Mobile Satellites Services for WRC-27

## Studies Needed for New MSS Frequency Bands around 1.5 GHz and 2 GHz

- **WRC-27 Agenda Item 1.12:**

Studies on potential new allocations to, and regulatory actions for, the mobile-satellite service in the frequency bands 1 427-1 432 MHz (space-to-Earth), 1 645.5-1 646.5 MHz (space-to-Earth) (Earth-to-space), 1 880-1 920 MHz (space-to-Earth) (Earth-to-space) and 2 010-2 025 MHz (space-to-Earth) (Earth-to-space) required for the future development of low-data-rate non-geostationary mobile-satellite systems

# Studies for Mobile Satellites Services for WRC-27 (Contd...)

- **WRC-27 Agenda Item 1.14:**

Studies on possible new frequency allocations to the mobile-satellite service in the frequency bands 2 010-2 025 MHz (Earth-to-space) and 2 160-2 170 MHz (space-to-Earth) in Regions 1 and 3 and 2 120-2 160 MHz (space-to-Earth) in all Regions

# Further studies on Non-consensus topics of WRC-23

WRC-23 also discussed some difficult topics on which no consensus could be reached - therefore further studies need to be carried out in preparations for WRC-27

## **EPFD Limits on NGSO:**

- The conference did not adopt future agenda items to study and potentially update Equivalent Power Flux-Density (EPFD) rules, highlighting the importance of protecting current investments in Geostationary Orbit (GSO) systems.
- Ongoing studies until WRC-27 will assess the need for regulatory actions, acknowledging the potential impact on GSO regulations.

## **Explicit Agreement for Satellite Services:**

- A resolution emphasized the sovereign right of Member States to regulate telecommunications within their territories, addressing concerns about satellite terminals operating without authorization.
- This resolution seeks to ensure that Low Earth Orbit (LEO) services occur only where authorized, without precluding LEO service.





THANK  
YOU