

USISPF Counter Comments on TRAI Consultation Paper on “Assignment of Spectrum for Space-Based Communication Services”

The U.S. India Strategic Partnership Forum (**USISPF**) welcomes the opportunity to provide feedback on the TRAI Consultation Paper on Assignment of Spectrum for Space-Based Communication Services. Please see below our counter comments for your consideration.

1. Satellite Spectrum Must be Governed Separately From Terrestrial Spectrum:

Satellite or orbital spectrum is used for sending signals from earth to space satellites and vice versa. Given that these signals travel from earth to space/satellites and from space/satellites to earth, satellite network has no territorial limits. Satellite spectrum can be used by multiple service providers across the world on a non-exclusionary basis. Moreover, multiple satellite operators can use the same satellite spectrum without diminishing the availability of that spectrum for others.

Terrestrial spectrum is used exclusively by a service provider to provide voice and data services via earth-based transmitters. Unlike satellite spectrum, a terrestrial network has geographical boundaries as these services rely on earth-based transmitters located in a particular geographical area. While satellite spectrum can be used by multiple services providers across the world in a non-exclusionary manner, each frequency band in terrestrial spectrum can only be used by a single operator and cannot be shared in the same geographical area.

The concept of scarcity does not apply to satellite spectrum as it is non rivalrous and can be used by multiple services providers on a non-exclusive basis. Given that multiple users can share satellite spectrum without diminishing its availability for others, it does not serve public interest to make it exclusive. Moreover, under international space laws, satellites are considered “space objects” and come under the jurisdiction of the International Telecommunication Union (**ITU**), a specialized UN agency responsible for allocation of global radio spectrum, satellite orbits and development of common technical standards. Satellite systems must be internationally coordinated as per relevant ITU Regulations to avoid harmful interference to radio services of other countries.

In contrast, the concept of scarcity applies to terrestrial networks that have national boundaries as such spectrum has to be utilised by a single operator and cannot be shared. Accordingly, to avoid issues of scarcity, public interest is best served by auctioning terrestrial spectrum.

2. Different Regulatory Frameworks for the “Same Service”

In a reference letter (No. L-14006/01/2021-NTG dated 13.09.2021), the Department of Telecommunications (**DoT**) equates satellite spectrum with terrestrial spectrum by referring to both as access spectrum. In its letter DoT states, “in case of satellite communication, the subscriber is accessed from the satellite through “Access Spectrum” similar to “Access Spectrum” in terrestrial network and the demand for such spectrum will potentially increase in the future.” While we agree that satellite spectrum and terrestrial spectrum are both access spectrum, it is erroneous to conclude that both should be auctioned on an exclusive basis – their differences have been highlighted above. This conclusion is fundamentally flawed as it disregards the principles for having different regulatory frameworks for the “same service”.

Additionally, in a response to TRAI (letter No. J-19022/01/2022-SAT dated 16.08.2022), DoT envisages auctioning the space spectrum on an exclusive basis before undertaking any public consultation. It states, “it is envisaged to auction the Space Spectrum on exclusive basis. TRAI may explore feasibility and procedure of sharing auctioned spectrum among multiple service licensees. TRAI may provide recommendations on sharing of auctioned frequency bands between satellite networks and terrestrial networks also, the criteria for sharing and appropriate interference mitigation techniques for sharing and coexistence.” This disregards the fundamental distinction between satellite spectrum and terrestrial spectrum and limits the scope of the TRAI consultation.

The difference between fixed satellite systems and mobile terrestrial / satellite systems is important to note. While satellite spectrum is a shared resource, spectrum is exclusively used by operators in the case of terrestrial services.

On the other hand, fixed satellite systems are technologically capable of sharing spectrum while also operating efficiently. Additionally, ITU coordination mechanisms enable operators to manage interference and provide these services efficiently. Therefore, satellite services can share spectrum across several GSO/NGSO systems without fragmenting the spectrum. Interference can easily be avoided by following sharing conditions specified in Article 9 of the ITU Radio Regulations.

3. Implications of Auctioning Satellite Spectrum for the Indian Satellite Broadcasting Industry

The Indian Satellite Broadcasting Industry or broadcasting and cable industry generated a revenue of INR 709 billion in 2022 and provides direct and indirect employment to 4.5 million people. The industry caters to 800 million viewers and comprises of content creators, teleport operators, broadcasters, and Distribution Platform Operators. Satellite spectrum is crucial to the functioning of this industry as broadcasters rely on the C-Band (3.7GHz to 4.2 GHz) to seamlessly distribute 885 registered TV channels to the DPOs. Furthermore, DTH operators use the Ku-Band (10GHz to 15 GHz) to distribute TV channels to their subscribers.

Auctioning satellite spectrum will have adverse implications for this industry. We request you to consider the following:

Interference between satellite-based services and terrestrial services and artificial scarcity of spectrum: During the recent 5G auction, some portion of the C-Band (i.e., 3.3GHz to 3.67GHz) was auctioned. Consequently, the broadcasting and cable industry experienced interference with terrestrial services as the auction reduced the guard band to protect broadcasting services from telecom services from 100MHz to 10MHz. If the C-Band auctioned, then such frequencies (3.7-4.2 GHz) may also be used for non-broadcast services. This will create an artificial scarcity for broadcasting services impacting the supply and cost of using satellite spectrum for broadcasters.

Risk of satellite redundancies: If satellite frequencies are auctioned and used for terrestrial transmission, this could lead to satellites becoming redundant.

Reduced competition and Gatekeeping: Auctioning satellite spectrum will create entry barriers to the market for spectrum. Currently, administrative allocation of satellite spectrum allows the C-Band to be shared between 350 broadcasters and more than 1700 DPOs for uplinking and downlinking of channels. If this were to be auctioned, many of these broadcasters and DPOs would not have the resources to acquire the necessary spectrum and many small broadcasters would be deprived of the opportunity to broadcast their channels.

This would hinder distribution of content and potentially violate the freedom of speech and expression of broadcasters. The right to propagate ideas has been recognised by the Supreme Court¹ as being part of the right to free speech and expression. The Supreme Court held² that there could not be any restriction on the freedom of speech and expression on the grounds of public interest, or on any grounds other than those mentioned in Article 19 (2) of the Indian Constitution. The Supreme Court in the 1995 ‘Airwaves Judgement’³ also held that “Airwaves being public property, it is the duty of the State to see that airwaves are so utilised as to advance the free speech right of the citizens which is served by ensuring plurality and diversity of views, opinions and ideas.”

Further, auctioning satellite spectrum and thereby limiting participation / users would reinforce concentration amongst dominant players, give rise to gatekeepers and create artificial entry barriers. Accordingly, auctioning satellite spectrum will lead to reduced competition and impact the plurality and diversity of views in India.

Impact on international coordination mechanisms with respect to a shared global resource: Terrestrial spectrum allocation is managed by the relevant national government. However, allocation of satellite spectrum requires both global coordination and national management as satellites are “space objects” and come under the jurisdiction of the ITU. As part of its management process, the ITU has an international binding treaty for its 193 member countries, including India, called the “Radio Regulations”. These regulations determine how the radio

¹ Sakal Newspapers v. Union of India (1962 AIR 305)

² Indian Express Newspaper v. Union of India (1985 SCR (2) 287)

³ Secretary, Ministry of Information and Broadcasting v. Cricket Association of Bengal 1995 (2) SCC (161)

frequency spectrum is shared across different services, including space services, and provide detailed guidelines on using specific equipment to ensure successful coexistence of services across the radio spectrum. According to the ITU, international coordination is necessary on spectrum matters.⁴ The use of satellite spectrum involves regional coordination with neighbouring regions to avoid interference with spectrum use by other countries, so it is essential for countries to follow a common global standard. Any deviation would disrupt existing and time-tested coordination mechanisms.

Under the ITU's regulatory framework for space services⁵, the right to use orbital and spectrum resources for a satellite network are negotiated with administrative authorities on a need basis, which would not be possible if spectrum is exclusively assigned to a service provider. Moreover, the ITU's dispute resolution mechanism only provides for member states to be represented⁶. In other words, there are no provisions under the ITU regulations⁷ for an exclusive spectrum holder to resolve disputes with other member states.

Impact on coverage of international events, including live sports events: To broadcast live events taking place overseas in India, the uplinking service provider (or the media rights holder) shares the frequency details for downlinking in India, close to the date of the event. The long-established international coordination mechanism provided under the ITU Radio Regulations framework for satellite and orbital slots makes this possible. However, if frequencies for downlinking in India are auctioned, then the spectrum holder will have the discretion to make the event available in India. This could potentially deny Indians the opportunity to watch international sporting events and other live events.

Auctioning will also impact the public broadcaster, Prasar Bharati when it wants to cover international events such as the Olympics. In India, public broadcasting plays an important role in the dissemination of sports as well as news, entertainment, and emergency communications during natural disasters. However, if India's public broadcaster, Prasar Bharati, fails to secure frequencies in the C-Band or Ku-Band, it might not be able to perform its statutory functions as mandated by the Prasar Bharati (Broadcasting Corporation of India) Act. Moreover, broadcasters that are mandated to share clean feeds of live sporting events with Prasar Bharati under Sports Broadcasting Signals (Mandatory Sharing with Prasar Bharati) Act will also face coordination issues if spectrum is auctioned and the spectrum holder has the discretion to make the event available in India.

LEO systems do not interfere / adversely impact broadcast/ DTH services: Broadcast services operate in the C Band whereas LEOs presently operate in the Ka band. DTH systems in India operate in the portion of the Ku Band meant for fixed satellite systems. In case of any overlap, the limits specified in Article 22 can be used to manage interference. Additionally, GSO and NGSOs can coordinate in bands where Article 22 limits do not apply. Therefore, it would be incorrect to conclude that LEOs interfere with DTH/ broadcast services.

4. Allocation of 27.5- 28.5 GHz band Not Required for IMT

Given that there is enough availability of frequency in other bands for use by IMT/ 5G, we do not recommend the allocation of the 27.5-28.5 GHz band for IMT. Spectrum in the 26 GHz band remained unsold in the recent 2022 5G auctions. Accordingly, keeping the 27.5-28.5 band reserved for satellite will not result in any adverse impact on rollout of 5G. Additionally, the WRC-19 Resolutions have identified alternate bands that can support IMT applications, including 37-43.5, 45.5-47, 47.2-48.2, and 66-71 GHz bands. Moreover, the WRC-23 agenda does not identify the 27.5 - 28.5 GHz band for IMT use.

⁴ Joaquin Restrepo, Radio Regulations, pg 6, available at: https://www.itu.int/dms_pub/itu-r/md/15/wrs18/sp/R15-WRS18-SP-0003!!!PDF-E.pdf

⁵ [itu.int](https://www.itu.int)

⁶ Constitution of the ITU, Article 56, available at <https://www.itu.int/en/council/Documents/basic-texts/Constitution-E.pdf>

⁷ ITU, Regulatory Publications, "The Radio Regulations (RR) form an integral part of the Administrative Regulations", available at: <https://www.itu.int/en/publications/ITU-R/Pages/default.aspx>

5. Examples and learnings from other jurisdictions:

While countries such as U.S., Brazil and Mexico tried to auction the satellite orbital slot (not spectrum), they discontinued the approach of auctioning orbital slots. In Saudi Arabia, a portion of the MSS "S band" was auctioned once. However, half of the spectrum was sold for terrestrial use (with the potential for conversion), raising doubts about its long-term focus on space-based communications. Additionally, Saudi Arabia only auctioned spectrum in the L and S bands, where it is exclusively assigned. Further, the recent auctions conducted in Thailand were for orbital slots rather than satellite spectrum. The participation in these auctions was also limited – there were only two bidders (one being a government-owned company) and only three out of five orbital slots were sold.

The few countries that have tried to auction satellite assets for domestic use, such as national orbital slots, have either abandoned the practice (as observed in the US since 2004 and Brazil since 2021) or encountered difficulties with unsuccessful auctions (as seen in Thailand and Mexico). These examples highlight the challenges and limited success of auctions in promoting competition in the telecommunications sector.

Accordingly, please see our recommendations below.

- Satellite spectrum and terrestrial spectrum are inherently different and should be regulated differently from terrestrial spectrum.
- Auctioning of satellite spectrum is not in the public interest as it will lead to artificial scarcity and consequent market failure. Given that satellite spectrum can be shared amongst multiple service providers without diminishing what is available to others, administrative allocation is the most efficient method of allocation. For optimum use of various spectrum and enabling efficient use of for satellite technologies, the entire spectrum should be made available for use by satellite service providers.
- Satellite spectrum should be allocated administratively to multiple service providers on a non-exclusive basis for providing satellite-based communications, broadcasting, broadband connectivity, weather forecasting, Global Positioning Systems (GPS), etc.
- The draft Indian Telecommunications Bill 2022, which explicitly acknowledges the difference between satellite spectrum and terrestrial spectrum and addresses spectrum management should not be introduced in Parliament until TRAI finalizes its recommendations on the issue of “Assignment of Spectrum for Space-based Communication Services”.