



COUNTER COMMENTS TO TRAI CP CONSULTATION PAPER ON “ASSIGNMENT OF SPECTRUM FOR SPACE-BASED COMMUNICATION SERVICES”

22 June 2023,

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Dear Sir,

We appreciate the Telecom Regulatory Authority of India (TRAI) for publishing comments on the Consultation Paper on ‘Assignment of Spectrum for Space-based Communication Services’ and providing an opportunity to submit counter-comments. Please see our counter-comments below. Specifically, we respond to stakeholder views in support of an auction for satellite spectrum.

1. Stakeholders prefer administrative allocation of satellite spectrum over auctions.

Stakeholder comments show that a majority prefers administrative assignment of satellite spectrum over auctions, especially in case of frequency bands used for broadcasting and media services – C band, Ka band, and Ku band. 75 percent of stakeholders (48 out of 64) prefer administrative assignment of satellite spectrum over auctions. Broadly, they cite the following reasons for the same.

- An auction would require slicing existing frequency bands and fragmented ownership of spectrum bands. It will depreciate the efficiency of communications over satellite spectrum.
- Auction winners will have exclusivity over frequency bands, and this will lead to gatekeeping. Auctions may also lead to a scenario where small media businesses that need satellite spectrum to operate will be subject to gatekeeper prices that they cannot afford, and therefore impact media plurality.
- A government decision to auction spectrum accords preference to spectrum use for IMT/5G services over broadcasting. Broadcasting serves unique public interest needs like public announcements, and information dissemination during disasters.
- Administrative assignment is essential to ensure interference-free communications. Auctions for C-band, Ku band, and Ka band, or a reduction in the existing frequency allocations for broadcasting services would interfere with broadcasting services.



2. Our counter comments to stakeholders who prefer auctions as the mode of assignment.

The following table outlines key arguments made by stakeholder who favour auctions as the mode of spectrum assignment and our counter comments.

No.	Stakeholder comments	Counter comments	Recommendation
1	<p><u>Auctions will reduce interference:</u> Exclusive assignment of spectrum through auctions will ensure interference-free operations in space-based and terrestrial communication services.</p>	<p>First, it is important to note that satellite spectrum and terrestrial spectrum have different characteristics and use-cases. Satellite-to-earth station communication and space-to-space communication uses satellite spectrum. Communication between landing stations or landing stations to end-users use terrestrial spectrum.</p> <p>Global coordination of satellite spectrum allocation under the aegis of the International Telecommunication Union (ITU) is based on the principles of efficient use and equitable access to spectrum/orbit resources.¹ In the case of terrestrial spectrum, each frequency band can be used only by a single operator and cannot be shared because of interference. Different networks in adjacent channels may cause significant inter-network interference, even with a guard band.²</p> <p>Multiple service providers can use satellite spectrum and it is non-rivalrous and non-exclusionary in nature. Multiple operators may use the same satellite frequency using different satellites without interference. The positioning of the satellites ensures that there will be no interference on the receiver end. Countries coordinate with each other for use of different orbital positions for GSO or N-GSO satellite networks.</p> <p>For these reasons, administrative allocation by the WPC wing of the Department of Telecommunications (DoT) is the best way forward. The WPC assesses</p>	<p>Terrestrial spectrum and satellite spectrum have distinct characteristics and use-cases and must not be accorded similar regulatory treatment.</p> <p>Administrative allocation should continue for satellite spectrum in C-band, Ka band, and Ku band, for better government oversight, international coordination, and interference-free communication.</p>

¹ Article 44(2) of the ITU Constitution, available at: <https://www.itu.int/en/council/Documents/basic-texts/Constitution-E.pdf#page=49>.

² Jeong Seon Yeom et al., "Performance Analysis of Satellite and Terrestrial Spectrum-Shared Networks with Directional Antenna," ETRI Journal 42, no. 5 (2020): pp. 712-720, <https://doi.org/10.4218/etrij.2020-0185>.



		<p>potential interference issues with other services and use by neighbouring countries before administrative allocation. Since, satellite spectrum is non-rivalrous, the WPC can allocate spectrum efficiently between multiple stakeholders.</p> <p>In case of an auction and exclusive privilege over spectrum to a private stakeholder, WPC cannot oversee spectrum use and regional coordination. For instance, frequency bands like C-band have a guard band to avoid interference with broadcasting communication. An auction would fragment frequency bands and split exclusive privilege among several stakeholders. The government would be unable to step in and create a guard band in such a scenario and it will affect smooth functioning of broadcasting businesses.</p>	
2	<p><u>Accord priority to IMT/5G:</u> Satellite spectrum auctions are necessary to unleash the true potential of the sector.</p> <p>C-band should be prioritized for IMT/5G services.</p> <p>Spectrum assignment should be technology neutral. Spectrum assignment should be done through auction without any separate treatment for any</p>	<p>Several services use satellite spectrum to provide their services to consumers, and it is important to ensure sustainable growth for other satellite-based services like TV broadcasting. TV broadcasters use satellite spectrum for uplinking and downlinking content and broadcasting is an important public interest vehicle for dissemination of information to consumers. There are 180 million TV households in India today and it will increase to 206 million by 2025, according to estimates.³</p> <p>Auction of satellite spectrum in the C-band/mid-band [3.6–4.2 GHz] will adversely affect broadcasters and distributors who currently use the frequency band. The Indian government has never given preference to one sector over another nor has it prescribed a recommended technology for conducting business in India. The current move seeks to shift broadcasters to 4-4.2 GHz frequency band and free up spectrum for IMT/5G services. The government has preferred IMT/5G deployment over broadcasting services. However, broadcasting is an important public interest vehicle that caters to 180 million TV households. 5G uptake on the other hand, is expected to reach 1/3rd of Indian consumers by 2030.⁴</p> <p>The TRAI is statutorily bound to promote the interests of consumers and service</p>	<p>The TRAI must protect service provider and consumer interest in a holistic manner and not by picking winners.</p> <p>The regulator must assess the impact of a satellite spectrum auction on broadcasters in consultation with stakeholders. 1.3(b)(iv) of the National Digital Communications Policy 2018 lists “Assessing the bandwidth demands across various spectrum bands used for satellite communications, in</p>

³ FICCI-EY, Windows of Opportunity: India’s Media and Entertainment Sector – Maximizing across segments (April 2023), available at: <https://ficci.in/publication.asp?spid=23783> , pg 50.

⁴ GSMA, India on the road to a digital nation (September 2022), available at: <https://www.gsma.com/asia-pacific/wp-content/uploads/2022/09/India-report-FINAL-WEB.pdf>

	<p>service.</p>	<p>providers in both the sectors and ensure orderly market growth.⁵ In this regard, the TRAI must evaluate the impact of freeing up 3.6 – 4.2 GHz spectrum on broadcasters and adopt a position that benefits consumers and service providers in both sectors. Shifting broadcasting communication to an alternative frequency band requires significant capital investment and time. The government has not undertaken a comprehensive evaluation of satellite and earth station capacity in the 4 – 4.2 GHz band for broadcasters or estimated the investment required to shift broadcasters. Further, Indian broadcasting relies heavily on satellite communications compared to other countries that have terrestrial broadcasting networks. Advanced countries like the United States estimate a period of 39 months to repack and shift TV stations.⁶</p>	<p><i>consultation with stakeholders”</i> as one of its objectives to optimise satellite communications in India.</p>
<p>3</p>	<p><u>Auctions help arrive at optimal valuation and infuses efficiency:</u> Spectrum auction will help arrive at the most appropriate and optimal monetary value for spectrum. Government can derive a fair and optimal revenue from auction proceeds and consumers can enjoy the benefits of</p>	<p>Auction leads to price discovery only when the current demand is greater than the auctioned spectrum. However, evidence suggests that in 2013 none of the spectrum⁷ was sold above RP, in 2014, 2015 and 2016 only 53 percent, 79 percent and 21 percent of the spectrum put to auction was sold above the RP respectively. Similarly, in 2022 over 99 percent quantum of the spectrum was sold at the reserve price⁸. Thus, evidence from IMT auctions indicates it as an inefficient allocational method as it has not led to price discovery.</p> <p>While revenue maximization is an important consideration, economically efficient usage of a resource should be the primary objective of the assignment. Unutilised spectrum due to auctions may eventually leads to an irretrievable loss in the long haul.</p> <p>High spectrum costs lower the incentive to invest in network expansion, upgrades and subsequently lead to higher consumer prices.</p>	<p>The TRAI should view spectrum assignment within the wider context of economically efficient usage and public good, and not just revenue maximization. Administrative allocation of satellite spectrum is the ideal method to achieve economically efficient and public interest outcomes in satellite communications.</p>

⁵ Preamble, The Telecom Regulatory Authority of India Act, 1997.

⁶ Qualcomm, Global 5G Spectrum update (June 2020), available at: https://www.qualcomm.com/content/dam/qcomm-martech/dm-assets/documents/20200625_mipi - 5g_spectrum - dean_brenner_4.pdf#page=16.

⁷ A short Analysis of Spectrum auction in India (DoT, 2016)

⁸ Pragakar Medium (2023)

	<p>innovative services and new technologies at affordable rates.</p> <p>Auctions ensure transparency, encourages competition, and infuses efficiency.</p>	<p>Once auctioned, assigned and the complicated set of rules signed upon, the allocations cannot be changed during the tenure of a licence. This may deter investors specially in the broadcasting and satellite services.</p> <p>Auctions may also limit new entrants as:</p> <ul style="list-style-type: none"> • they lead to longer entry wait time due to annual /biannual scheduling. • Entrants may not be able to compete with incumbent firms due to high prices. • Existing licensees would be negatively impacted by any change in the coordination rules after all spectrum blocks are auctioned. <p>Several arguments that support satellite spectrum auction rely on the 2G spectrum judgement. In a later reference by the President of India, the Supreme Court clarified that it did not consider whether auctions are the best way to allocate spectrum in the matter. The Court said that it was specifically looking at the method for spectrum distribution between September 2007 and March 2008.⁹ Essentially, the Court clarified that its finding in the case does not have wider applicability to all future spectrum distribution by the Indian government.</p> <p>Further, the Supreme Court opined “<i>Auction may be the best way of maximising revenue, but revenue maximisation may not always be the best way to serve public good.</i>”¹⁰ in a reference by the President of India seeking clarity on the 2G spectrum judgement. Public good in case of spectrum assignment should cover interests of service providers and consumers of all satellite-based communication services.</p>	
4	<p>The ITU’s Radio Regulations do not establish a binding precedent: The</p>	<p>It is incorrect to say that the ITU does not establish rules or guidelines regarding the methodology of spectrum assignment. The ITU Radio Regulations include key principles that members must follow. The ITU sets an international standard for spectrum assignment methodology. International instruments like the ITU Radio</p>	<p>India should follow international standards set by the ITU.</p>

⁹ Special Reference No. 1 of 2012, [2012] 9 SCR 311, para 78.

¹⁰ Special Reference No. 1 of 2012, [2012] 9 SCR 311

	<p>primary role of the ITU is focused on the allocation of orbital slots and the management of interference. It does not establish rules or guidelines regarding the methodology for spectrum assignment or the pricing decisions made by sovereign states</p>	<p>Regulations outline fundamental principles. Practice by Member states clarify the application of internationally agreed upon principles and establish a common standard.</p> <p>Article 9 of the ITU Radio Regulations provides for a mechanism to share and coordinate spectrum use to ensure efficient utilization of spectrum resources. The mechanism ensures interference-free communication and cost-effective spectrum use. A majority of countries follow spectrum assignment through administrative allocation.</p> <p>The ITU's international spectrum coordination mechanisms and spectrum management rules determine satellite spectrum usage. Satellite systems function in predefined frequency bands. The ITU notifies and registers satellite systems in the Master International Frequency Register (MFIR) after a rigorous coordination process. Market-based auctions will slice spectrum bands and fragment spectrum between bidders on an exclusive basis. This will conflict with the MFIR mechanism and international coordination processes.</p> <p>Exclusive auctioning of satellite spectrum that can be shared between operators would lead to spectrum segmentation and inefficient use. It would go against public interest and principles enshrined under ITU Radio Regulations. Article 4.1 of the ITU Radio Regulations states that “<i>Member States shall endeavour to limit the number of frequencies and the spectrum used to the minimum essential to provide satisfactorily the necessary services...</i>”¹¹.</p>	<p>Administrative allocation of satellite spectrum is an international norm that India must not deviate from to preserve international coordination mechanisms and prevent fragmentation.</p>
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¹¹ Article 4.1, ITU Radio Regulations, Edition of 2020.